CIVIL ENGINEERING DRAWING
3rd Semester Civil

Chapter 1
AUTOCAD SOFTWARE

1.1

Joint	J
Plot	Ctrl + P
Save	Ctrl + S
Open	Ctrl + O
New	Ctrl + N
Grid (ON/OFF)	F7
Ortho (ON/OFF)	F8

Line	L
Circle	C
Offset	O
Trim	TR
Extend	EX
Copy	CO
Move	M
Polyline	PL
Rotate	RO
Filet	F
Chamfer	CHA

Ploygon	POL
Array	AR
Rectangle	REC
Mirror	MI
Unit	UN
Hatch	H
Text	T
Multitext	MT
Stretch	S

Line Command use to draw lines in AutoCAD

1. Press F8 on keyboard to turn on ORTHO
2. Click on the LINE icon in the draw toolbar.
3. Specify first point: Pick any point on your screen with the mouse
4. Move your cursor to the right a little do not click down.
5. Type in: 2 (press enter)
6. Move your cursor up a little do not click down
7. Type in: 2 (press enter)
8. Move your cursor to the left a little do not pick down
9. Type in: 2 (press enter)
10. Move you cursor down a little do not click down
11. Type in: 2 (press enter)
    you should have drawn a perfect box see figure 1
12. Press the ESC key in the upper left corner of your keyboard to cancel the LINE command.

1. Click on the LINE icon
2. Specify first point: Pick any point on your screen with the mouse
3. Move your cursor to the right a little do not click down
4. Type in: 2 (press enter)
5. Press F8 on the keyboard to turn off ORTHO
6. Specify next point: Pick point 2 with your mouse
7. Type in: C (press enter)
   you should created something that resembles a triangle see image.
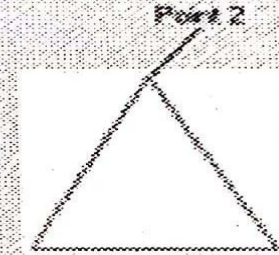
Point 2

Command used to draw a rectangle

1. Click on the **RECTANGLE** icon in the draw toolbar
2. Specify first corner point: **click anywheres on your screen**
3. Specify other corner: **move your cursor up and to the right any distance you wish then click down.**

If you wish to Draw a rectangle a specific size do the following:
1. **Repeat steps 1 and 2**
2. Specify other corner type in: **@3,1 (press enter)**
Using this option you have entered a specific length and height for your polygon. You may change the numbers to anything you wish but leave the @ and the , in its exact location. Broken down the 3 is the length and the 1 is the height. The @ symbol tells AutoCAD you are using relative co-ordinate entry.

Rectangle

Height (1)

Length (2)
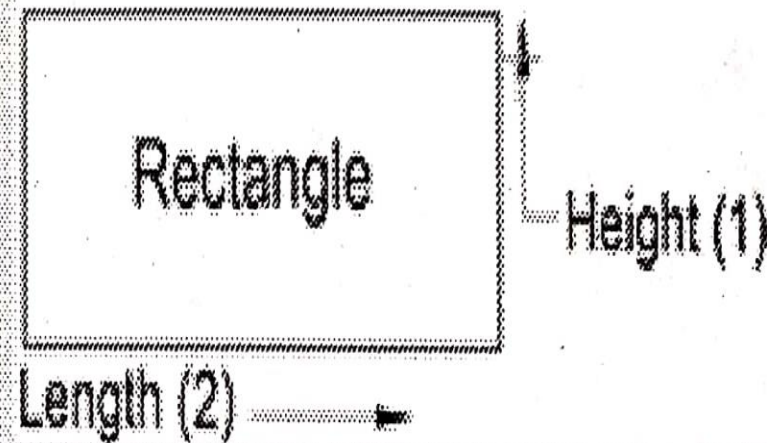
Command used to draw circles

1. Click on the **CIRCLE** icon in the draw toolbar.
2. Specify center point of circle: **click anywheres in the drawing area.**
3. Specify radius of circle Type in: **25 (press enter)**

To draw a circle by specifying a circle diameter do the following
1. **Repeat steps 1 and 2.**
2. Specify radius of circle Type in: **D (press enter)**
   The **D stands for diameter**
3. Specify diameter of circle Type in: **1 (press enter)**

To draw a circle at the intersection of two lines
1. Draw two lines that overlap using the **line command**
2. Click on the **CIRCLE** in the draw toolbar
3. Specify center point of circle Type in: **INT (press enter)**
4. Move your cursor to the intersection of the two lines until you see a **small yellow X** and the word **INTERSECTION** appears. Then click down.
5. Now you can either **type in a radius or type in D for diameter** and move on the next prompt to type in the diameter.

Circle drawn from the
Intersection of two lines

Two overlaping lines
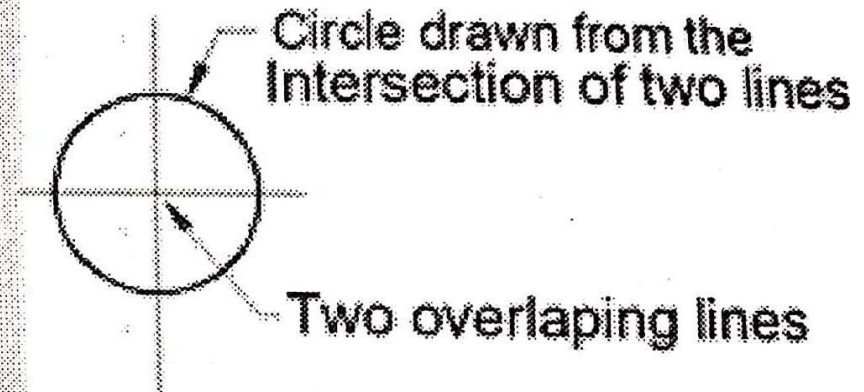
Command used to copy objects in the drawing area

2 copys

1. Draw a circle any diameter.
2. Click on the **COPY** icon in the edit toolbar
3. Select objects. **Select the circle with the pickbox (on the line) when the circle is highlighted press the ENTER key on the keyboard.**
4. Select objects: 1 found
   (This line tells that you have selected only 1 object)
   Select objects. **(This line ask you if you would like to select more objects if not press ENTER on the keyboard).**
5. Specify base point of displacement. **Pick with the cursor near the center of the circle.**
6. Move the object to the location you desire and click down with the mouse

Original
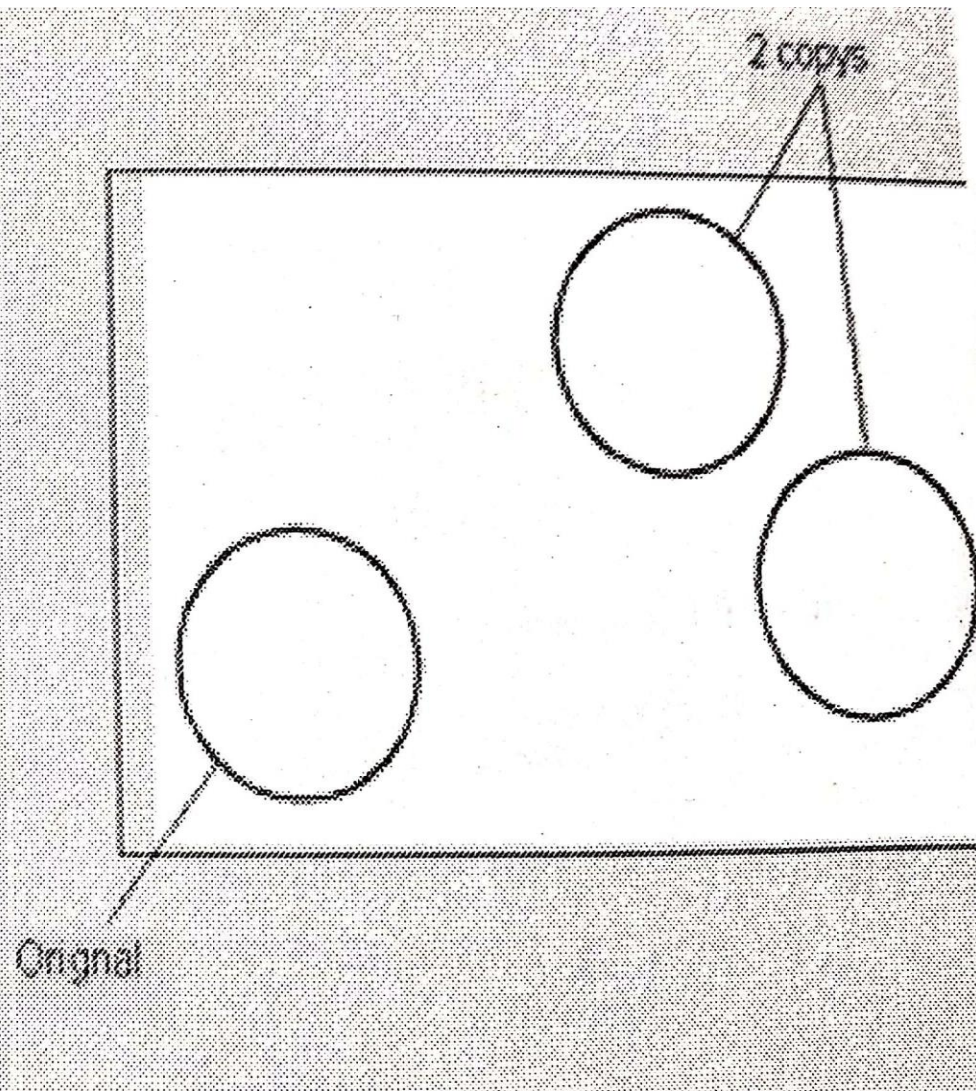
Command used to mirror an object to the side of another object:

1. Draw a rectangle any size using the rectangle command.
2. Click on the **MIRROR** icon in the edit toolbar.
3. Select objects: **Select the rectangle with the pickbox (on the line)**
4. Select objects: press **ENTER** on the keyboard.
5. Specify point on mirror line: **Move your cursor to the right and above a short distance from the rectangle. Click down with the mouse.**
6. Specify first point of mirror line: Specify second **point of mirror line: move your cursor down a short distance then click down with the mouse.**
7. Delete source objects Type in N (press enter). An exact duplicate of the rectangle you created in step 2 will be created to the right.
   **Note: If you create a mirror line above the rectangle an exact duplicate of the rectangle will be created above. You can mirror any object in the drawing area text, lines, circles, views, etc.**

Mirror line

Object to be mirrored

Mirrored object
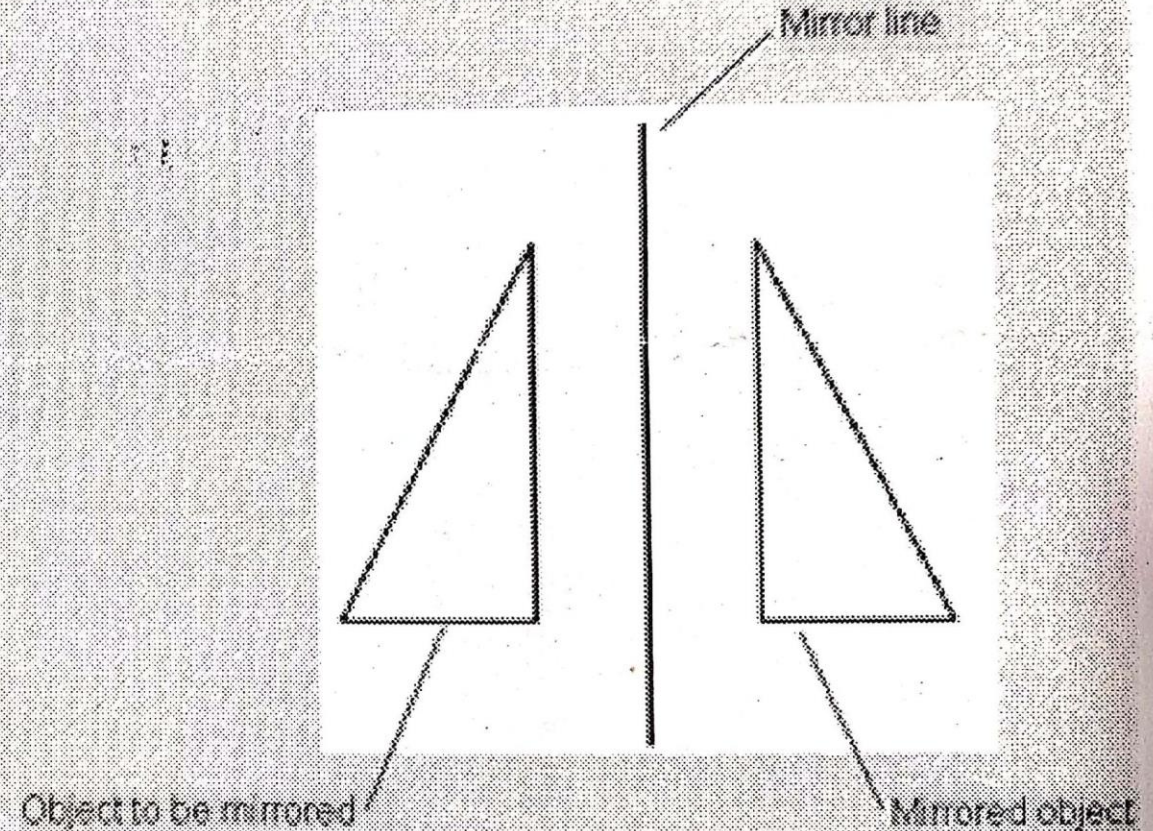
Command used to offset one object from another

1. Draw a circle and a line any diameter any length.
2. Click on the **OFFSET** icon in the edit toolbar
3. Specify offset distance Type in .50 (press enter)
4. Select object to offset **Select the line with the pickbox.**
5. Specify point on side to offset **Pick just above the line you have selected in step 4 with the cursor. An exact duplicate of the first line you selected in step 4 is created just above .50 distance away. If you would have picked below the line you picked in step 4 an exact duplicate would be created .50 below.**
6. Select object to offset press **ENTER** on the keyboard.

You can offset almost any object in the drawing area. You can offset text. You can also offset a circle to the inside or outside itself. To offset inside a circle click inside the circle. To offset outside the circle click outside the circle.

Line offset from original

Original Circle

Original Lines

Circle offset from original
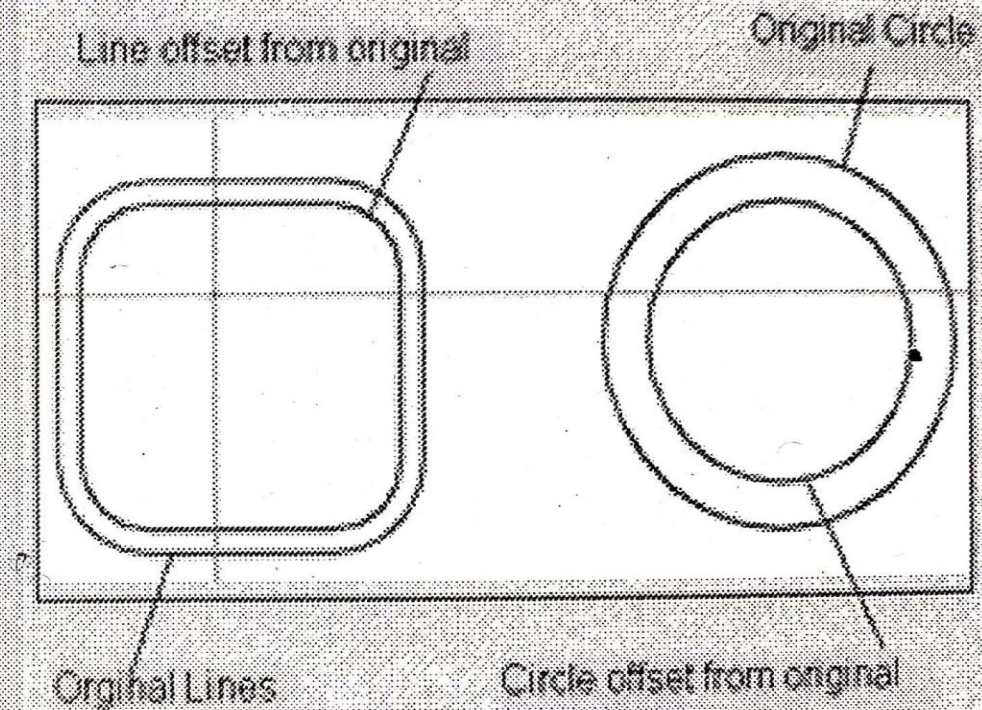
Command used to move an object from one location to another in the drawing area

1. Draw a circle any diameter
2. Click on the **MOVE** icon in the edit toolbar.
3. Select objects. Select the circle (on the line) then press **ENTER** on the keyboard.
4. Specify basepoint of displacement. **Select near the center of the circle with the cursor.**
5. Specify second point of displacement. If you move your cursor around a little in the drawing area you can see what is called rubberbanding.
6. Click down with the mouse anywhere within the drawing area at the desired location for the move.

Moved to new location

Original location of object
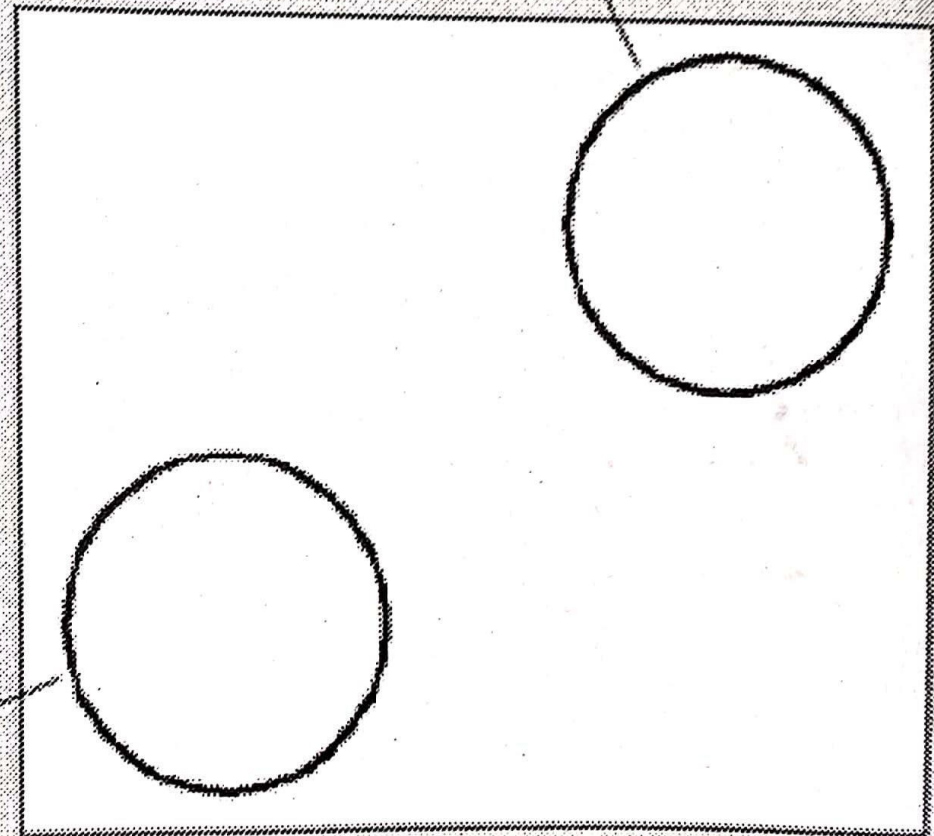
Command used to rotate an object around a point you pick

1. Draw a rectangle with only two equal sides using the rectangle command.
2. Click on the **ROTATE** icon in the edit toolbar.
3. Select objects. Select the rectangle (on the line) then press **ENTER** on the keyboard.
4. Specify base point. **Select somewheres near the center of the rectangle with the cursor.**
5. Specify rotation angle. **At this point you can type in an angle of rotation at the command line or by moving you mouse around you can dynamically see the desired rotation angle, then click down with the mouse when you like the rotation angle.**
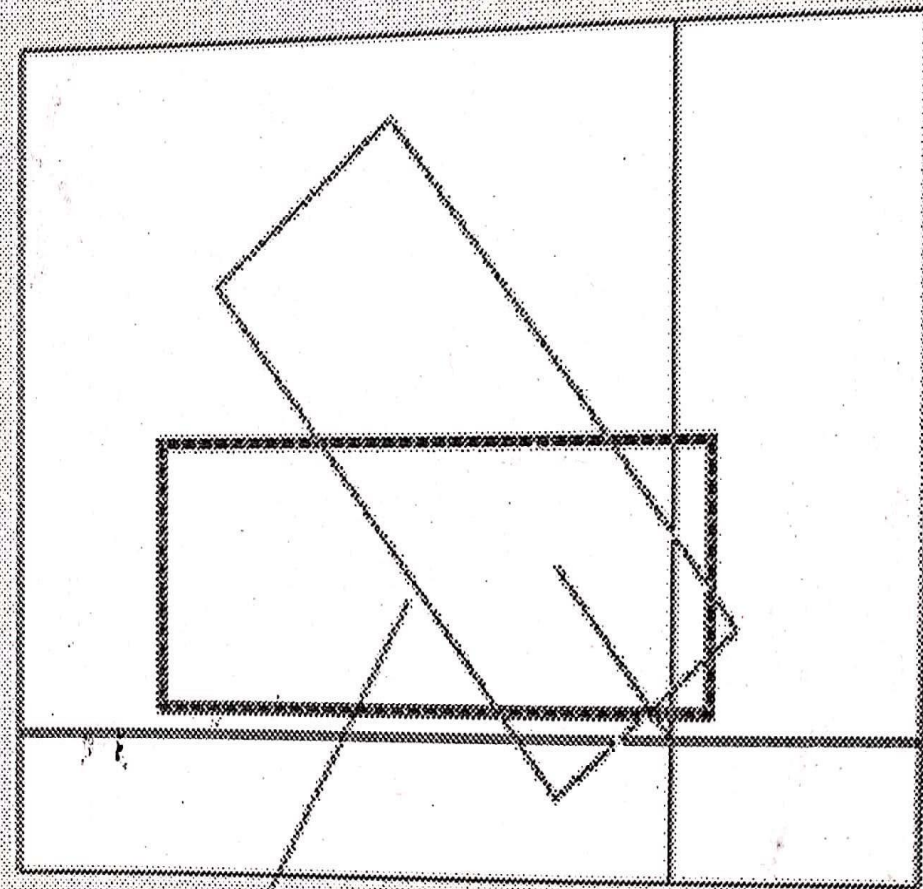
Object being rotated

1.2

With the following specifications draw to a scale of 1: 50 elevation, sectional plan and sectional elevation of a fully panelled double lear (shutter) door.

Opening in the wall 1200 mm. x 2000 mm.

Chowkhat - 100 mm. x 75 mm.

Top and Frieze Rails- 100 mm. x 45 mm.

Lock rail -200 mm. x 45 mm.

Bottom rail-175 mm. x 25 mm.

Hanging and meeting styles-100 mm. x 45 mm.

Thickness of panel -30 mm. and tapered to 20 mm.

Chowkhats are fixed to the wall by means of 300 mm. x 40 mm. x 60 mm. iron holdfast 3 Nos. on each side.

SECTION C-D

2000

150 · 50 · 100 · 100 · 300 · 100 · 100 · 100 · 150 · 100 · 200 · 100 · 300 · 100 · 175

25

LINTEL

TOP RAIL 100 × 45

FRIEZE RAIL 100 × 45

LOCK RAIL 200 × 45

BOTTOM RAIL 175 × 45

ELEVATION

150

150

2000

FRAME 45 mm.

PANEL 30 mm.

SECTIONAL PLAN AT A-B
FULLY PANELLED DOOR

25 · 75 · 75 · 75 · 150 · 75 · 75 · 25 · 100 · 75 · 25 · 75 · 75 · 150 · 75 · 75 · 25

600

600

1200

160
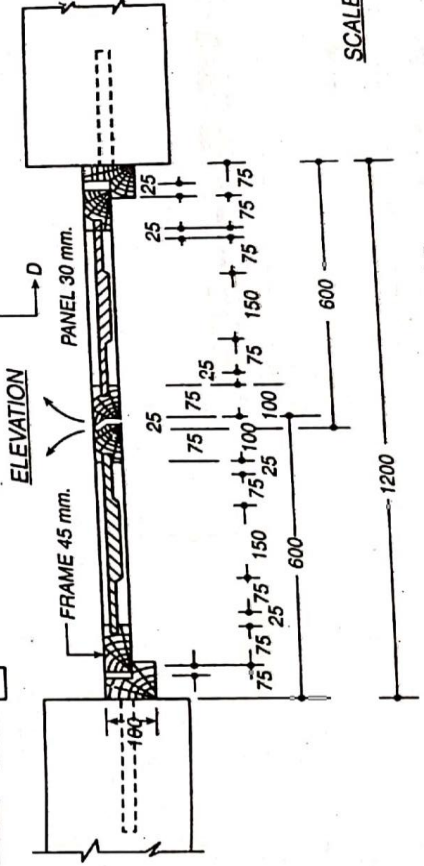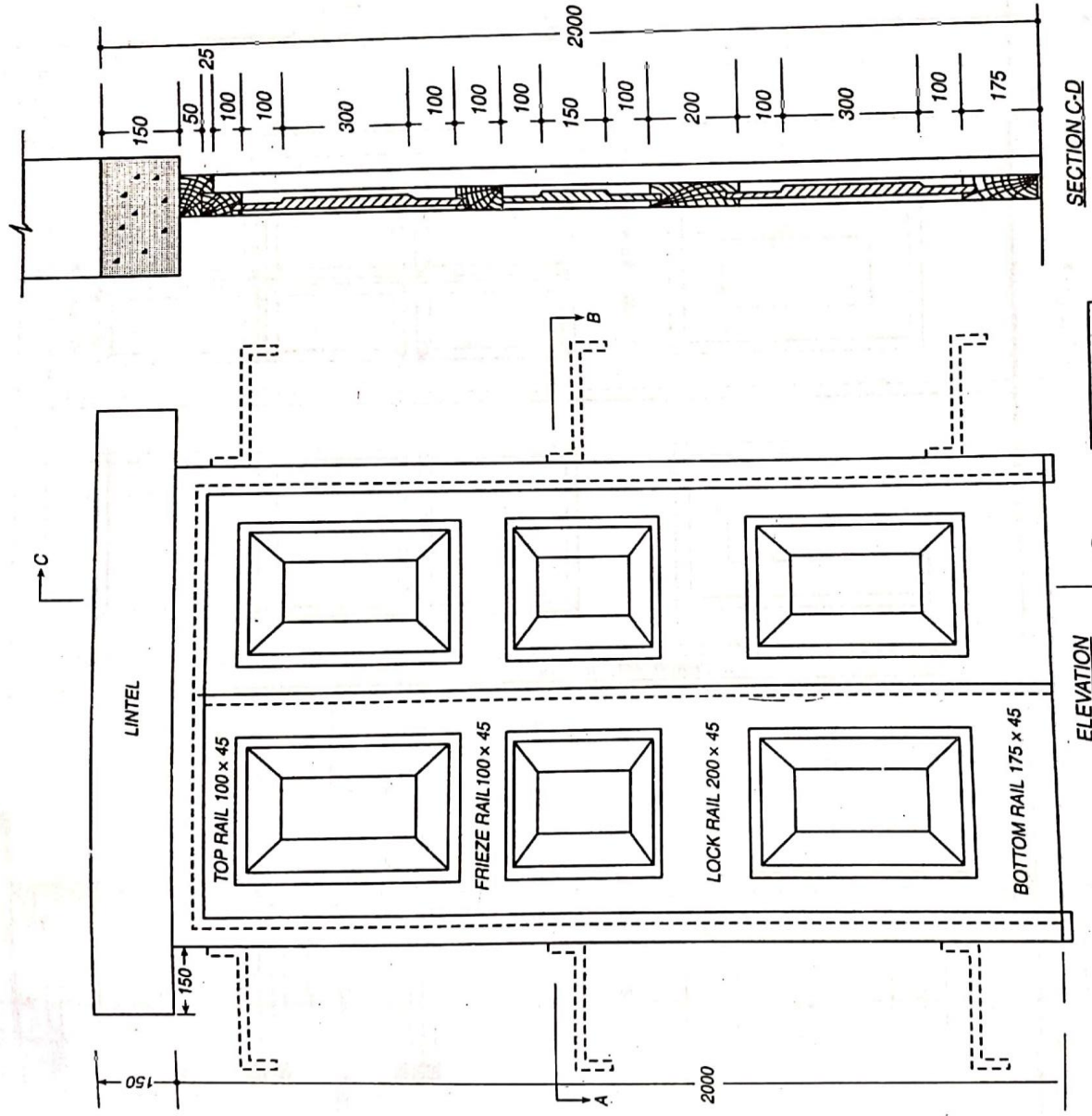
SCALE · 1 : 50

(For a Glazed Window). Draw to a scale of 1: 10 or 1: 15 the front elevation, sectional plan and sectional elevation of a glazed window for an opening of 1200 mm. x 1100 mm. Size of Rails and Styles are 70 mm. x 40 mm. and thickness of glass 4mm.

SECTIONAL PLAN AT C-D

A

C

D

ELEVATION

B

1200

150

75
70

230

20
20   20

230

20
20   20

230

70
75

1100

SECTION AT A-B

TOTAL THICKNESS OF SHUTTER
THICKNESS OF GLASS

75 70

385   70

70

70   385

70 75

SECTIONAL PLAN AT C-D

GLAZED WINDOW
SCALE :— 1 : 150
(SIZE - 1200 x 1100)
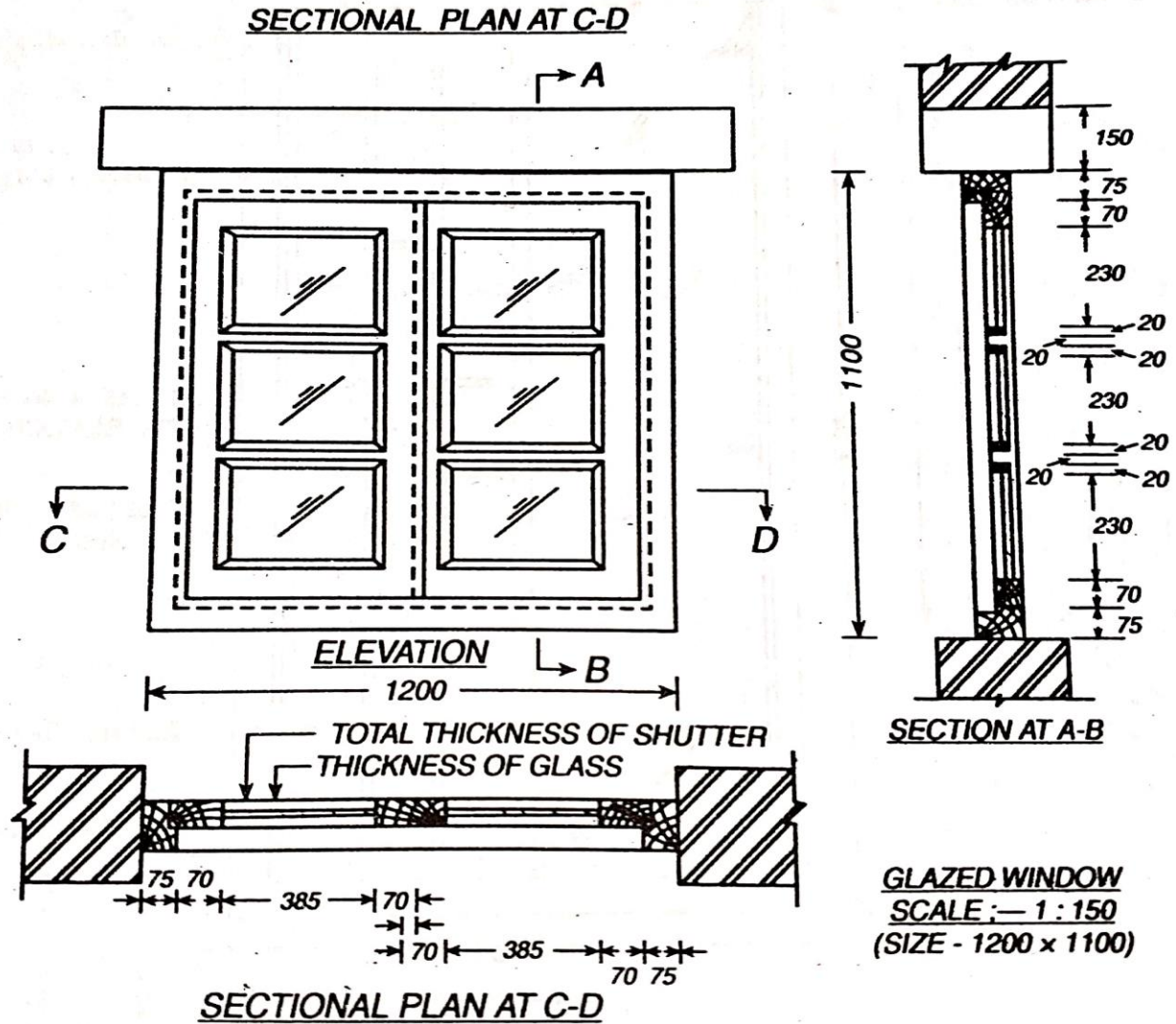
Design the foundation for a residential building with the following data:

Load per metre length on the soil of the wall 11.5 tons

Safe bearing capacity of soil 13 t/sq.m.

Angle of repose of soil = 30°

Thickness of superstructure wall. = 30cm

Density of soil 1=1600 Kg/cum

ROOF

SUPER STRUCTURE

PLINTH LEVEL (P.L.)

GROUND LEVEL (G.L)

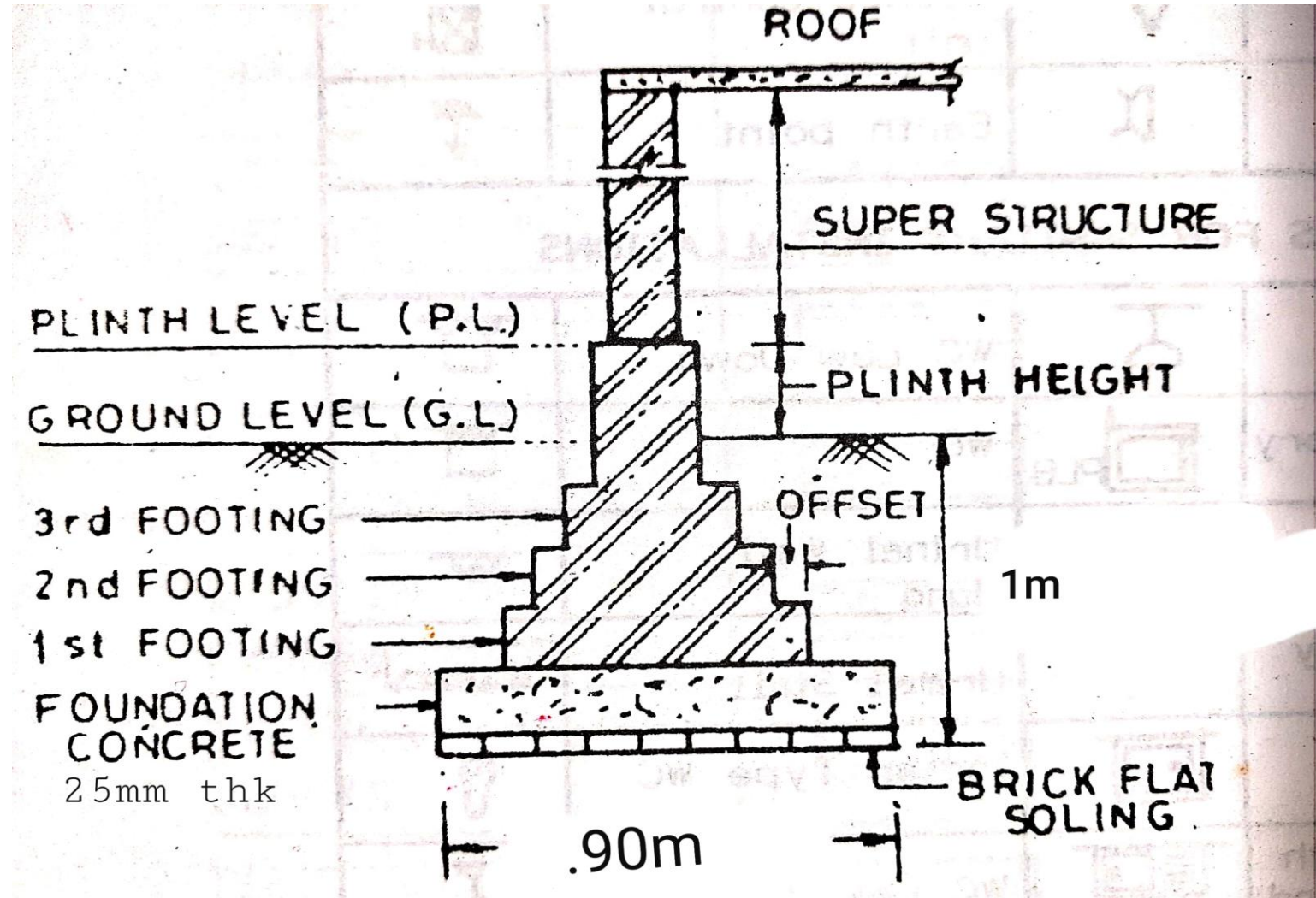PLINTH HEIGHT

3rd FOOTING

OFFSET

2nd FOOTING

1m

1st FOOTING

FOUNDATION
CONCRETE
25mm thk

BRICK FLAT
SOLING

.90m

A sq. R.C.C. Column 450mm x 450mm is to rest on a sloped R.C.C. square footing. The column carries a total load of 60 tones (600 KN). The S.B.C. of the soil is 15t/m2 (150KN). The depth of the foundation is 1.5m below G.L. The depth of footing is reduced from 750mm at the face of the column to 300mm at the edge of the footing. The column reinforcement consists of 8 bars of 20mm with 8mm stirrups at 200 mm c/c and the footing reinforcement consists of 12mm bars at 150mm c/c both ways. Draw to a suitable scale, the vertical section and plan of the footing showing the reinforcement details.

450

8 NOS. 20 mm ∅ BARS

25 COVER

8mm ∅ STIRRUPS
@ 200 C/C

GROUND LEVEL

800

1500

20 mm ∅ DOWEL BARS

750

12 mm ∅ @ 150 C/C
BOTHWAYS

300

50 COVER

2000

VERTICAL SECTION

2000

450

50 COVER

2000

450

8 NOS ∅ DOWEL BARS

12 mm ∅ @ 150 C/C
BOTHWAYS

P L A N   ALL DIMENSIONS ARE IN mm
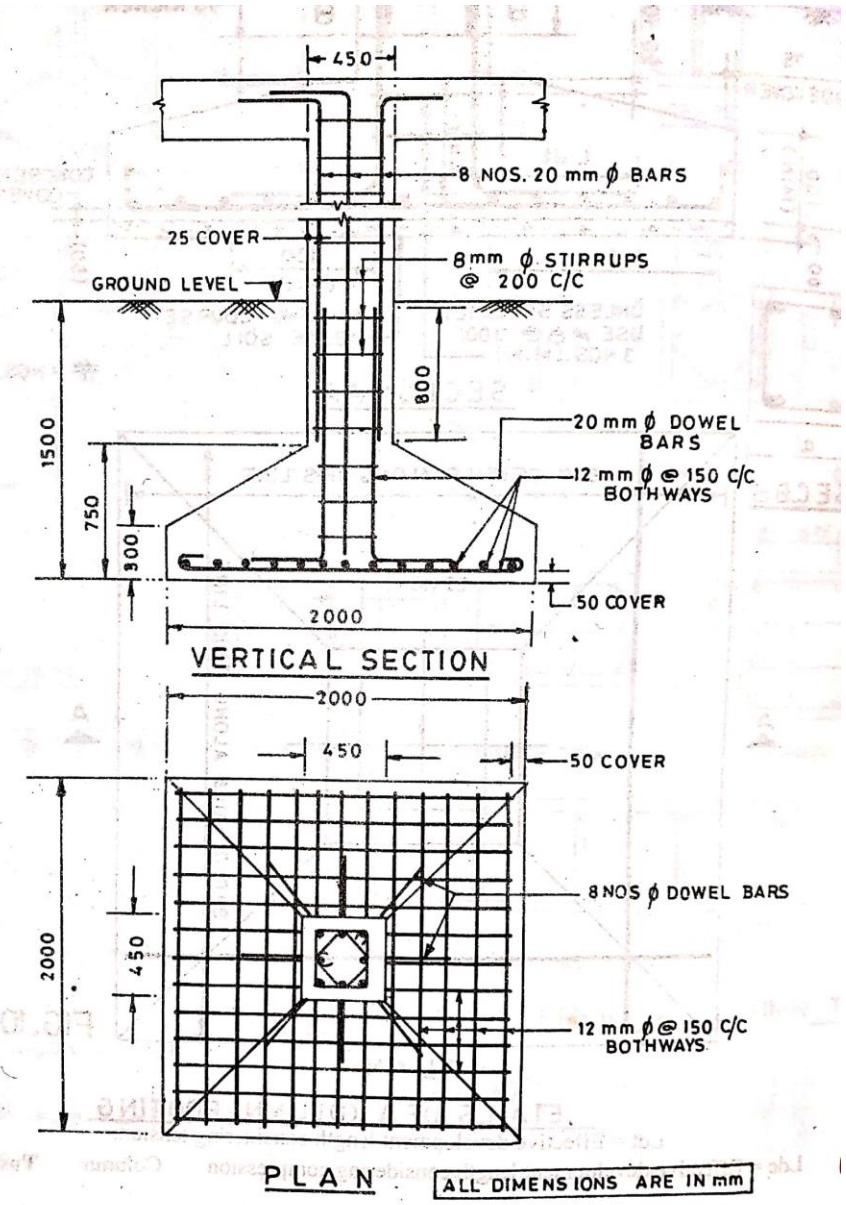
Sketch the plan and elevation of a dog-legged staircase with the following details:

No. of flights : 2;

No. of steps in each flight: 10;

Rise of each step : 150 mm;

Tread : 250 mm;

Width of flight : 1000 mm;

Height of each flight : 1650 mm.

Any missing data may be suitably assumed.
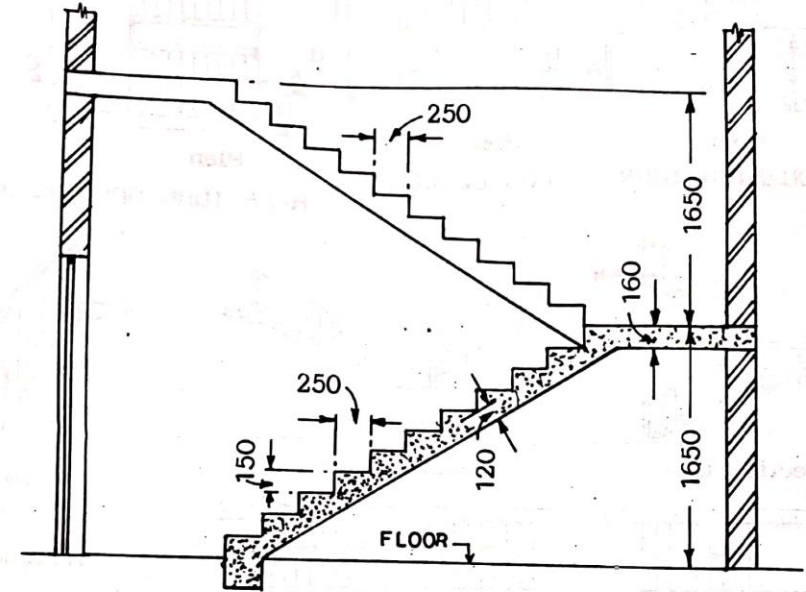
ELEVATION ON SECTION AA
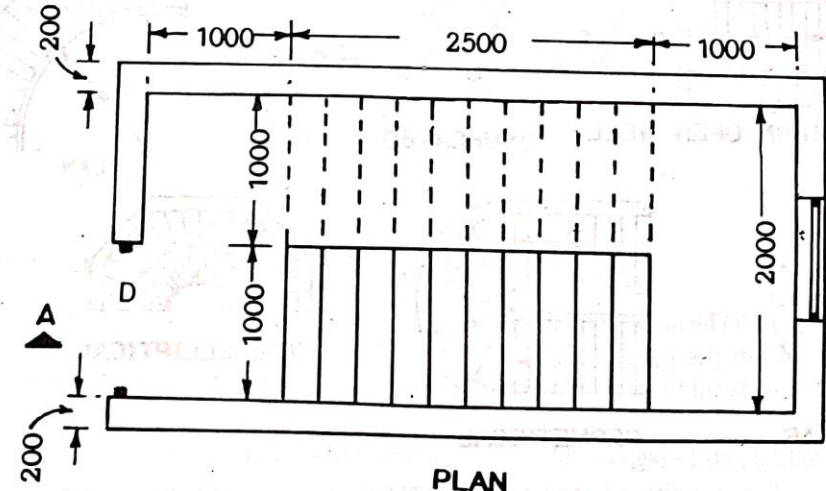
PLAN

Draw to a scale, the longitudinal section and cross sections at mid span and at supports, of a R.C.C. T-beam supporting a R.C.C. slab for a hall of 10m x 6m. Given the following data.

Clear span of beams 6m;

Wall thickness 300mm ;

Spacing of beams 3m c/c ;

Clear depth of beams 550mm;

Width of rib 225 mm;

Slab thickness 150mm;

Main reinforcement in beam is 8 bars of 22mm dia.;

Shear reinforcement is 10mm dia.

2 legged vertical stirrups at 100mm c/c from the end up to 1/5 span.

Hanger bar is 2 nos. 10 mm dia.

Slab reinforcement consists of 12mm dia. at 120mm c/c.

Distribution steel is 6mm dia. at 250mm c/c.

LONGITUDINAL SECTION OF BEAM

2 NOS. 22 ∅
2 NOS. 22 ∅
2 NOS. 10 ∅ HANGER BARS
12 ∅ @ 120 C/C ALTERNATE CRANKED BAR
10 ∅ @ 600 C/C
A
B
2b
2a
10 ∅ @ 100 C/C
22 ∅ SPACER
760
500
4 NOS. 22 ∅ (a+b)
4 NOS. 22 ∅
760
6000
300
300
150
550

CROSS SECTION AT SUPPORTS 'AA'

10 ∅ DIST. @ 250 C/C
750
C
150
ALTERNATE S.T. BAR (d)
4. NOS. 22 ∅
550
300 (c+d)
600
225
25 CLEAR COVER

CROSS SECTION AT MID SPAN 'BB'

12 ∅ 120 C/C
2 NOS. 10 ∅ HANGER BARS
150
ALTERNATE ST. BAR (d)
22 ∅ SPACER
600
2 (b) 22 ∅
2 (a) 22 ∅
4 NOS. 22 ∅ ST
550
225

PLAN OF HALL

2 M
3 M
3 M
2 M
10 M
6 M

ALL DIMENSIONS ARE IN mm

1.3 & 1.4

Draw a plan, elevation and 3D isometric view of a staircase.

RISE

TREAD

WAIST SLAB

BEAM

LANDING

BEAM

ELEVATION

PLAN

LANDING

BEAM

RISE

TREAD

BEAM

LANDING

30°

30°

ISOMETRIC VIEW

STAIR
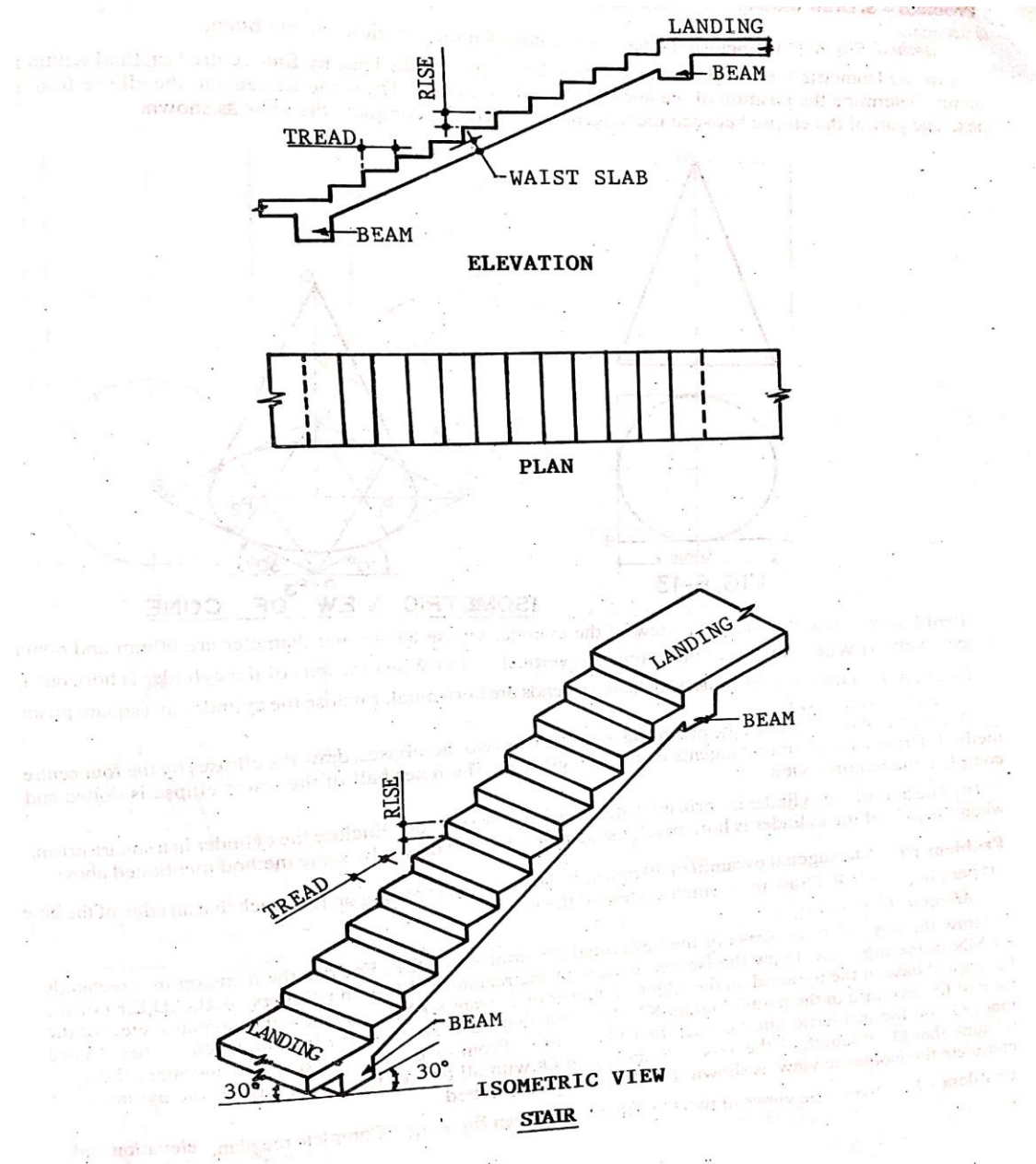
Chapter 2
Plan, Elevation and Sectional Elevation of Flat Roof Building from the line diagram and given specification with use of AutoCAD Software

2.1

Draw a plan at window sill level of a single storeyed R.C. roof slab building with elevation and sectional views form line diagram and specification given below.

Door size

D1 = 1100mm x 2100mm

D2 = 1200mm x 2100mm

Window size

W1 = 1000mm x 1200mm

W2 = 1200mm x 1200mm

Ventilator = 1000mm x 600mm

Wall thk. = 300mm

Plinth height = 600mm

Slab thk. = 100mm

Ceiling height = 3300mm

Any other necessary data may be assumed.

LINE DIAGRAM

ELEVATION

├─1000─┤ ├─1000─┤ ├─1500─┤

PLAN

DIMENSIONS ARE IN MMS.

B

├─3000─┤ ↓300 ↕300

M.S. GRILLE — 200 SQ. PILLAR

VERANDAH 2.0m WIDE

BED ROOM 4 × 4m

W₁ W₁

W₁

STUDY ROOM 3 × 3m

W₁

W₂ W₂

D₁

D₁ D₂

DRESS | TOILET 4 × 1.5m

W₃

PRAYER ROOM 3 × 2m

W₂ D₂

HALL FOR FAMILY FUNCTIONS 5.5m WIDE

R.C. BEAM

STORE 3 × 2m

W₂ D₂

BED ROOM 4 × 4m

W₁

W

KITCHEN 3 × 2.6m

W₂ D₂

W₁ W₁ O

D₁

D₂

TOILET 2.8 × 2m

W₃

R.C. BEAM

20.0m 20.6m

TOILET 3 × 1.5m

W₃ D₂

DINING 6.7 × 3.7m

TOILET 2.8 × 1.5m

W₂ W₃

200

50 W₁

200

D₁ D D₁ D₂

DRAWING ROOM 5.5 × 5.5m

LOBBY 3m WIDE

GUEST ROOM 4 × 3.5m

W

W₁

R.C. BEAM

D₁

W

VERANDAH 2.70m WIDE

D₁

W₁ W₁

200 SQ. PILLAR ├300

├─3000─┤ ↑300 7.7m

├──13.3m──┤

PLAN

SECTION ON A-B

CHAJA HEIGHT 100
HEIGHT OF PARAPET WALL 400
M.S. GRILLE 300
100

COPING 100×100
[75 TH. L.C. OVER 125 TH. R.C.C. SLAB]

800 | 800 | 800 | 800 | 800 | 600 | 1000
1400 | 1400 | 1400 | 1400 | 450

X

25 TH. D.P.C.

P.L. G.L.
200 450 150 150 200 200 250

CHAJA PROJ. 500

150 150 100

300 400 500 700

├─3000─┤ ├─2000─┤

DETAILS AT 'X' (ENLARGED)

DIMENSIONS ARE IN MMS.

SCHEDULE FOR DOORS AND WINDOWS

SL. NO.	SYMBOL	NO.	CLEARSIZE MASONRY OPENINGS, MM	FRAME SIZE MM	SHUTTER THICKNESS MM	TYPE
1	D	1	1110×2000	75×100	30	PANELLED DOUBLE SHUTTER
2	D₁	7	1000×2000	75×100	30	PANELLED SINGLE SHUTTER
3	D₂	6	800×2000	75×100	30	PANELLED SINGLE SHUTTER
4	W	3	1500×1400	75×100	25	PANELLED
5	W₁	11	1000×1400	75×100	25	PANELLED
6	W₂	5	800×1400	75×100	25	PANELLED
7	W₃	4	600×600	75×80	20	FULLY GLAZED
	OPENING O	1	1200×2000			

2.2

Draw a detail drawing of Double storeyed pucca building with R.C.C. stair case from line diagram and specification given below.

Door size

D1 = 1100mm x 2100mm

D2 = 1200mm x 2100mm

Window size

W1 = 1000mm x 1200mm

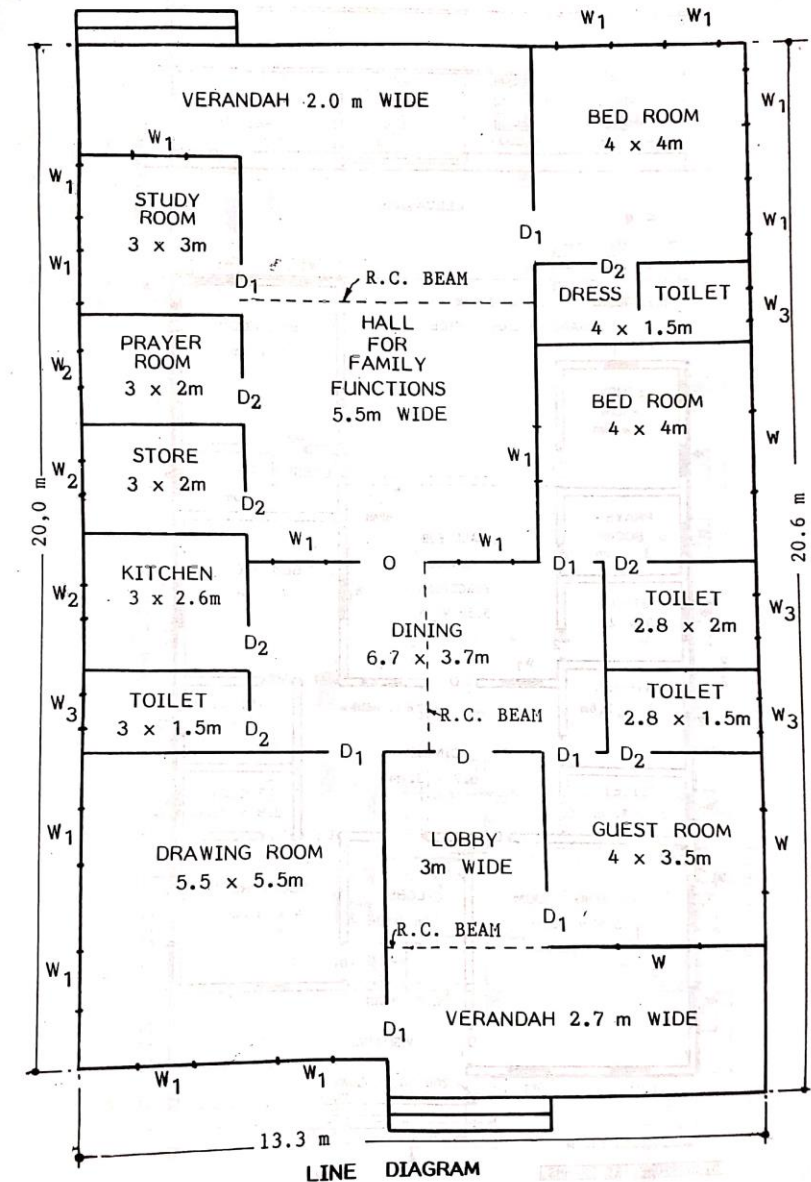W2 = 1200mm x 1200mm

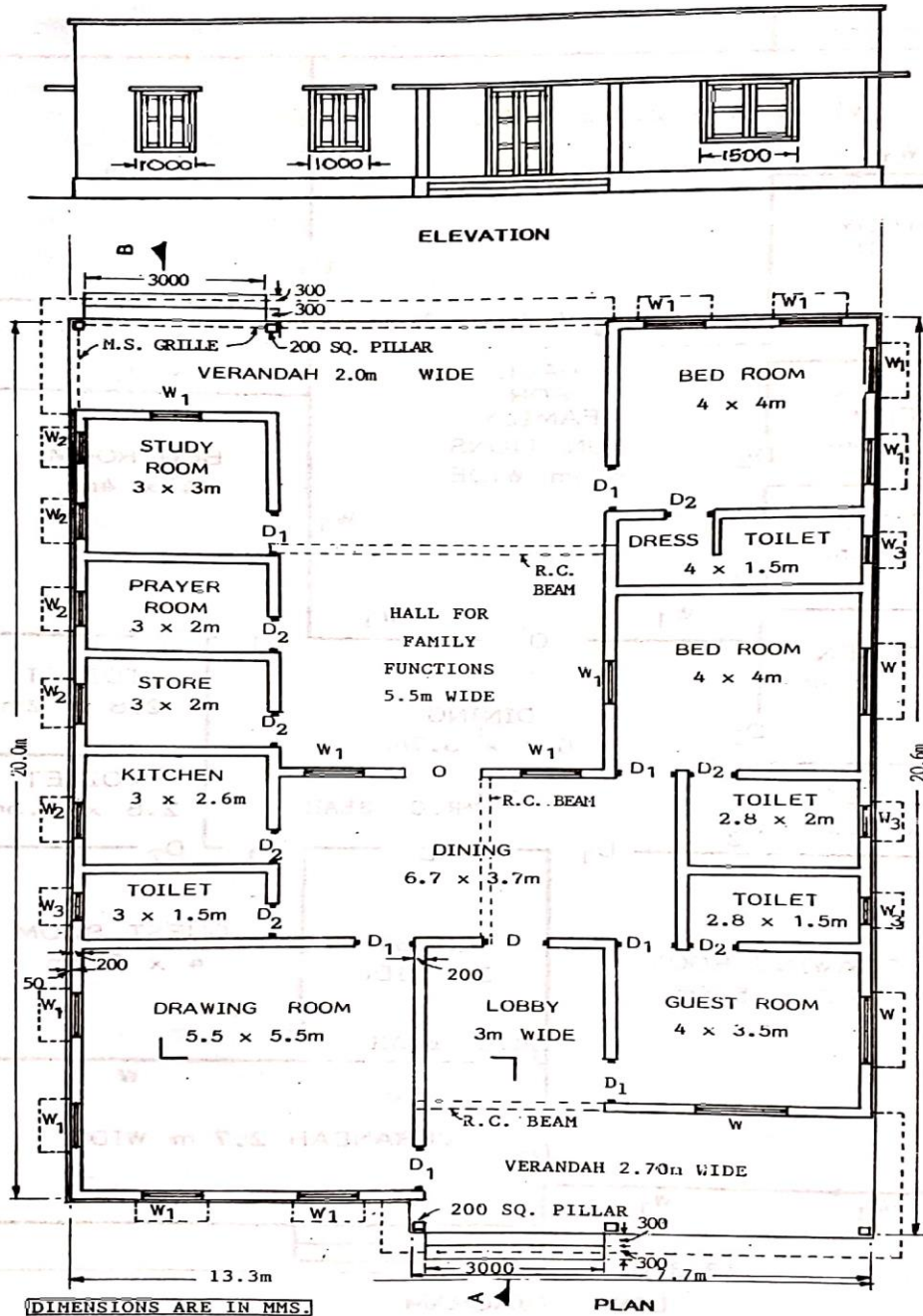Ventilator = 1000mm x 600mm

Wall thk. = 300mm

Plinth height = 600mm
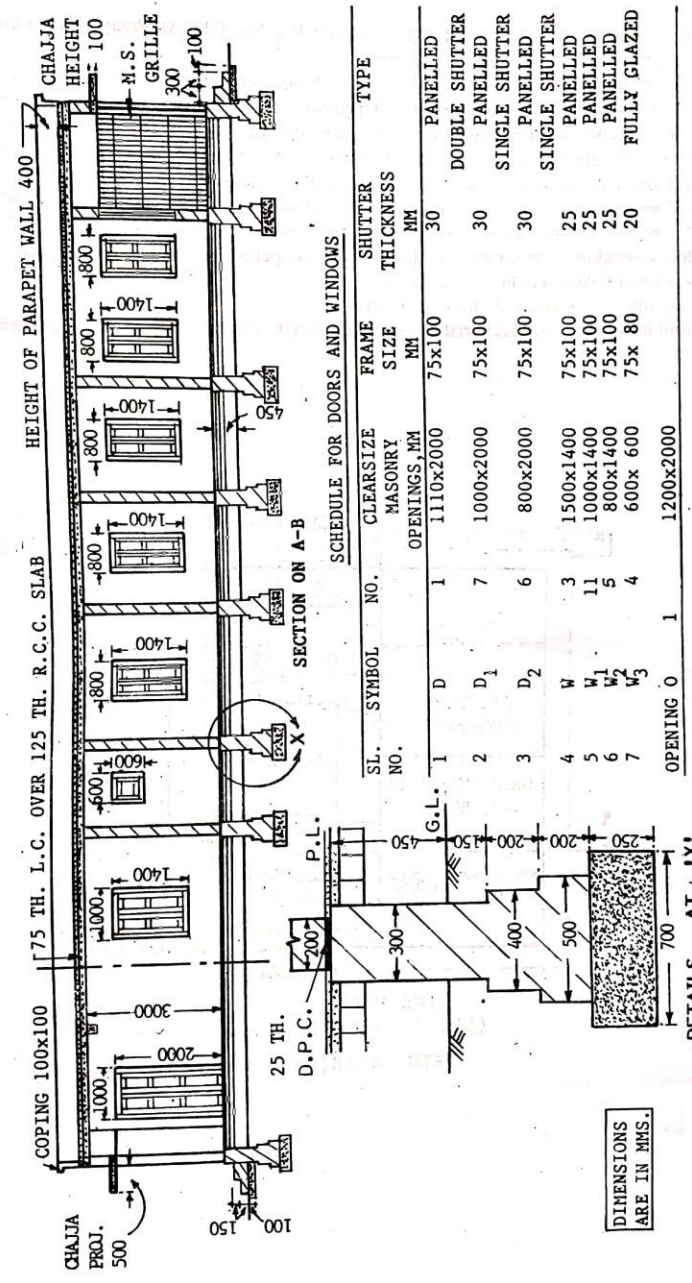
Slab thk. = 100mm

Ceiling height = 3300mm

Any other necessary data may be assumed.

KITCHEN 1800 x 2500

DINING 3400 x 2500

BATH ROOM 1250 x 2100

TOILET 1250 x 2100

TOILET 1250 x 2100

BATH ROOM 1250 x 2100

DINING 3400 x 2500

KITCHEN 1800 x 2500

1200 WIDE

1200 WIDE

BED ROOM 3600 x 4650

LIVING ROOM 3250 x 4650

LIVING ROOM 3250 x 4650

BED ROOM 3600 x 4650

STAIRCASE 2400 x 1200
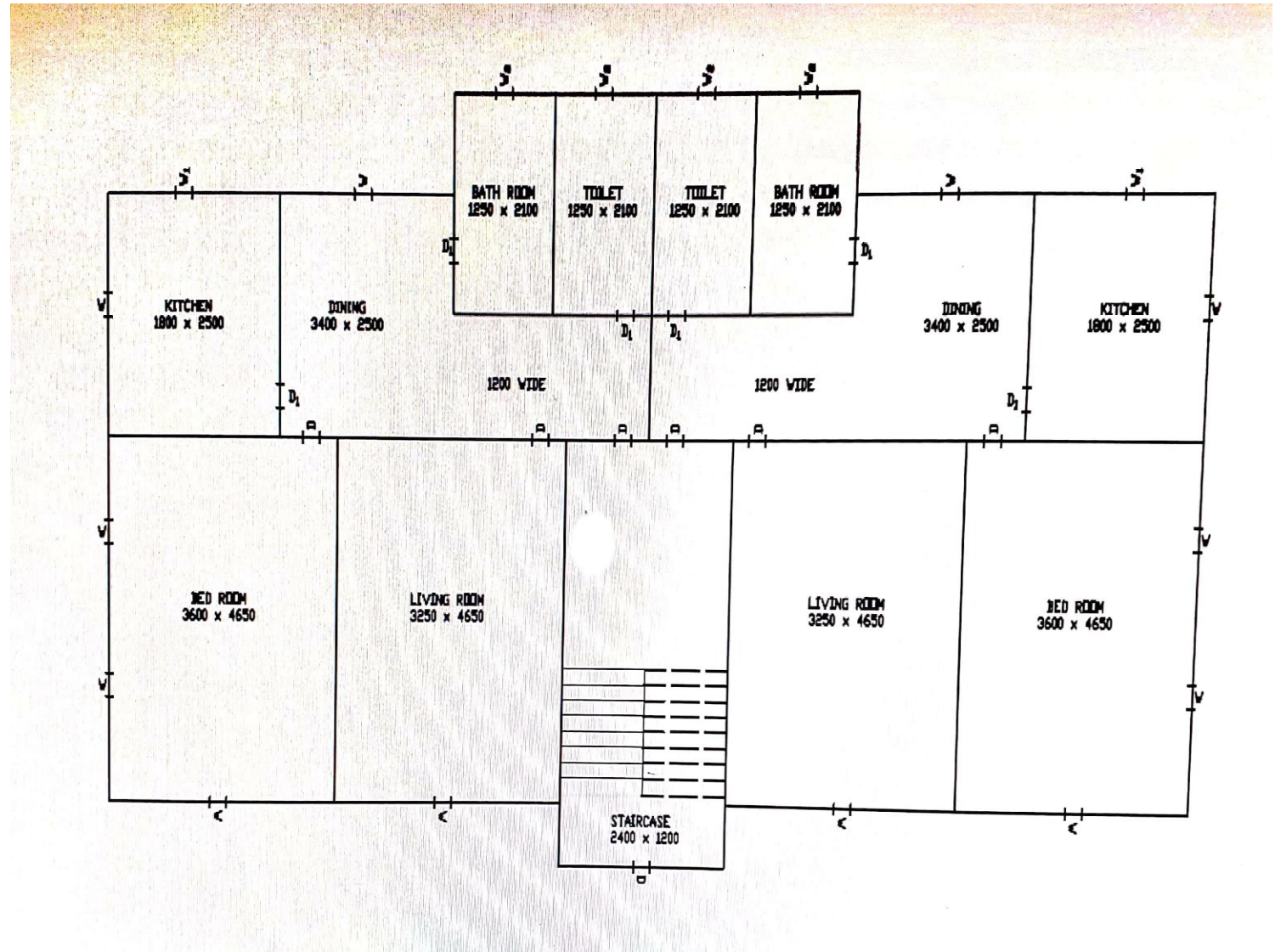
TWO STORIED BUILDING OF FOUR FLATS FOR MIG

BACKSIDE ELEVATION

- 100 ⌀ S.W. PIPE
- 20 mm ⌀ G.I. PIPE
- 20 mm ⌀ G.I. PIPE
- 100 ⌀ R.W. PIPE
- 100 ⌀ R.W. PIPE

GROUND FLOOR PLAN

- SEPTIC TANK
- STORAGE TANK
- SURFACE DRAIN
- I.C
- W₂ W₂ W₂ W₂₀
- BAT. 1200 2000
- TOI. 1200 2000
- TOI. 1200 2000
- BAT. 1200 2000
- KIT. 1800 2500
- DINING 3400 2500
- DINING 3400 2500
- KIT. 1800 2500
- 1200 WIDE
- 1200 WIDE
- BED ROOM 3500 × 4500
- LIVING 3150 × 4500
- LIVING 3150 × 4500
- BED ROOM 3500 × 4500
- UP DN
- 2400 × 1200
- 300 300 300 300 300
- 7900
- TO SURFACE DRAIN
- WATER SUPPLY
- 17500

SECTION AB

- 100 TH. L. CONC. OVER 100 TH. R.C. SLAB
- OVER HEAD WATER RESERVOIR
- S.W. PIPE
- 150-RISE 300. TREAD
- 150 TH LINTEL
- 100 TH R.C.C SLAB
- 100 TH R.C. SLAB
- 2500
- 1650
- 1650
- 1650
- 2250
- 900
- 900
- 900
- 200 200 200
- 3300
- 3300
- 300 300
- 300
- P.L.
- G.L.
- 400
- 600
- 100 th. B.F. SOLING
- 100 th. L.C. OVER 100 th. B.F. SOLING
- 900

FOUNDATION

- 200 1ST FLOOR
- 300
- 40 mm TH. (1:2:4) TOPPING
- 80 mm TH. (1:3:6) BASE LAYER
- 100 mm TH. B.F.S
- 3300
- P.L.
- G.L.
- EARTH FILLING
- 400
- 600
- 500
- 600
- 200 200 200 200 200 100
- 900

FIRST FLOOR PLAN

- BAT. 1250 2100
- TOI. 1250 2100
- TOI. 1250 2100
- BAT. 1250 2100
- KIT. 1950 × 2650
- DINING 3500 × 2650
- DINING 3500 × 2650
- KIT. 1950 × 2650
- 1200 WIDE
- 1200 WIDE
- BED ROOM 3650 × 4650
- LIVING ROOM 3250 × 4650
- LIVING ROOM 3250 × 4650
- BED ROOM 3650 × 4650
- UP
- 2500 × 1200
- 7900
- 17500

Chapter 3
Plan, Elevation and Sectional Elevation of Inclined Roof Building With AC Sheet/GCI/Tiles on Wooden Structure with use of AutoCAD Command

A linc plan of a residential building is shown in Figure. Prepare working drawing by using following data :- (All dimensions are in mm)

(a) Depth of foundation - 800,

(b) P.C.C. (1:4:8) for foundation bed - 150 thick.

(c) Plinth height - 450

(d) U.C.R. masonry in c.m. (1:6) for foundation and plinth,

(e) Superstructure in B.B.masonry in c.m. (1:6) 300 thick for all walls, cxcept bath and W.C. internal walls which are 100 thick,

(f) Height of bed room and sanitary block from plinth level to bottom of slab is 3000, except front verandah which has 2500 height.

(g) For pitched roof, height of bottom of tie beam above plinth level 3500.

(h) R.C.C. (1:2:4) slab 120 thick with 150 projection.

(i) Mangalore tiled roof projection 450.

(j) Mosaic tiled flooring 20 thick over 80 thick C.C. (1:3:6) bed, for all rooms, passages etc. and white glazed tiles with dado for W.C. and bath.
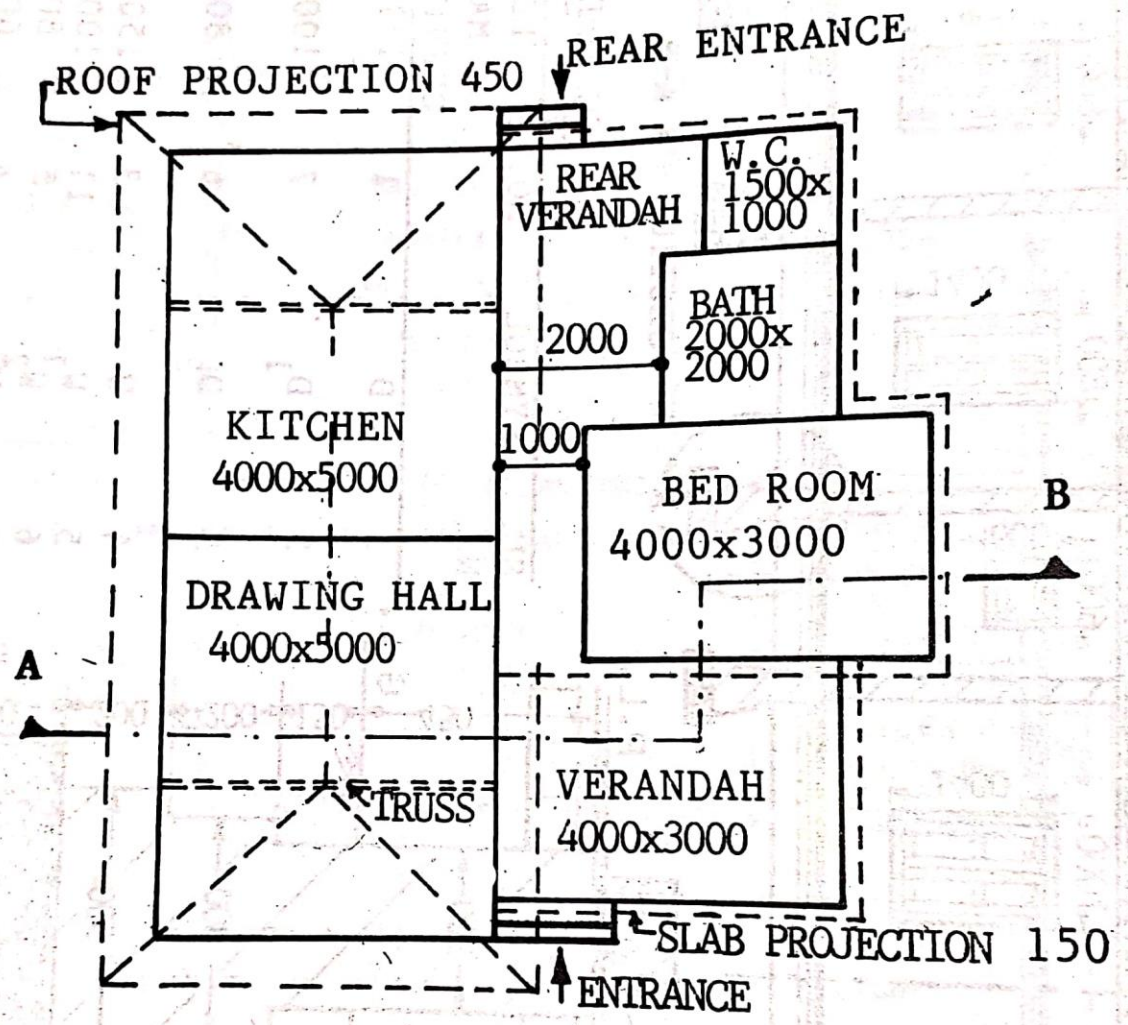
(k) Locate the doors, windows at proper places and provide parapet walls for front and rear verandah, built- in-cupboards, wash hand basin, kitchen platfrom etc. Assuming any other data required, draw the following :-
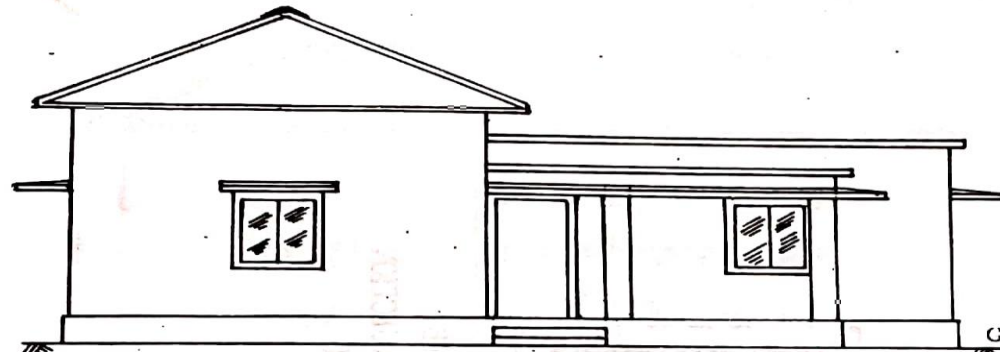
(i) Plan.

(ii) Front clevation.

(iii) Scctional elevation along AB.

(iv) Schedule of doors and windows.
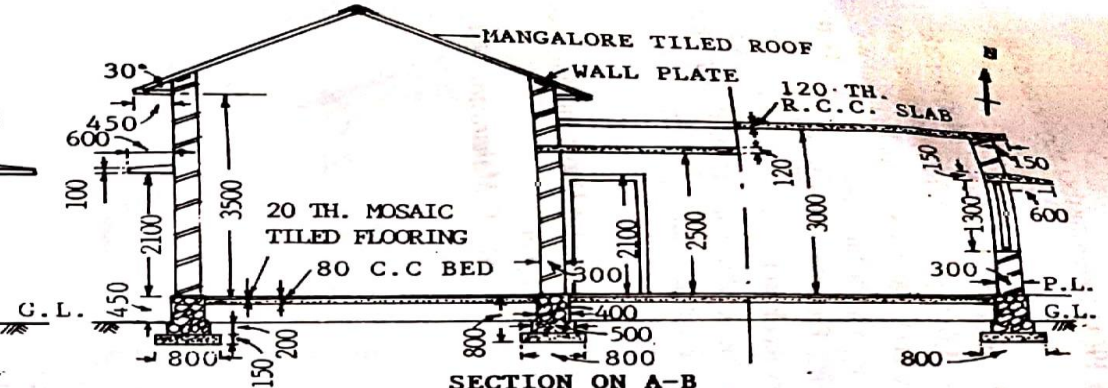
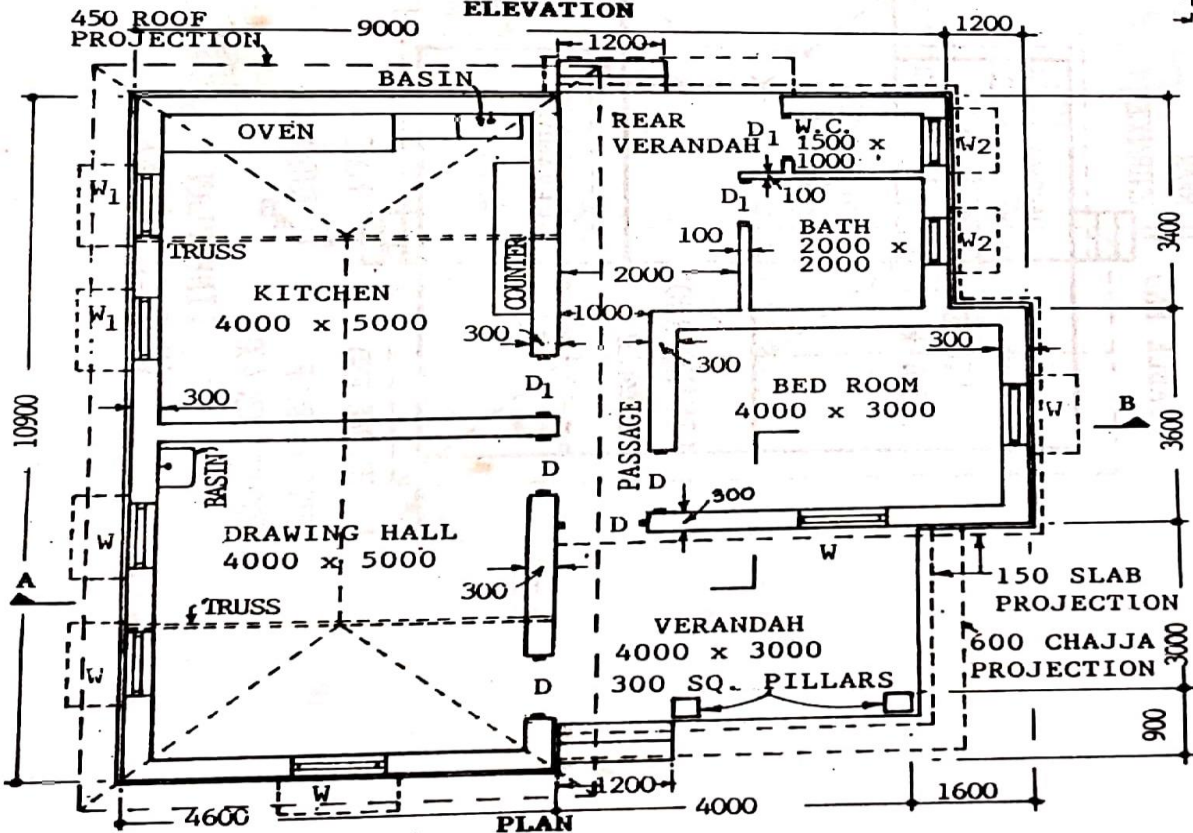ROOF PROJECTION 450   REAR ENTRANCE

REAR VERANDAH

W.C.
1500x
1000

BATH
2000x
2000

2000

1000

KITCHEN
4000x5000

BED ROOM
4000x3000

B

DRAWING HALL
4000x5000

A

TRUSS

VERANDAH
4000x3000

SLAB PROJECTION 150

ENTRANCE

LINE PLAN

ELEVATION

450 ROOF PROJECTION
9000
G.L.

SECTION ON A-B

MANGALORE TILED ROOF
WALL PLATE
120 TH. R.C.C. SLAB
30°
450
600
100
2100
3500
20 TH. MOSAIC TILED FLOORING
80 C.C BED
450
300
2100
2500
120
3000
150
150
600
300
P.L.
G.L.
800
150
200
800
400
500
800
800

SCHEDULE FOR DOORS AND WINDOWS

SL. NO.	SYMBOL	NOS.	CLEAR SIZE OF OPENING BxD, mm	FRAME SIZE mm	SHUTTER THICKNESS mm	TYPE
1.	D	4	1000x2100	1000x 750	400	FLUSH
2.	D₁	3	800x2100	1000x 750	400	FLUSH
3.	W	5	800x1300	1000x 750	300	GLAZED
4.	W₁	2	800x1000	1000x 750	300	GLAZED
5.	W₂	2	750x 750	750x 750	300	GLAZED

DIMENSIONS ARE IN MMS.

PLAN

1200
BASIN
OVEN
REAR VERANDAH
D₁
W.C. 1500 x 1000
W₂
D₁
100
W₁
TRUSS
COUNTER
BATH 2000 x 2000
W₂
100
KITCHEN 4000 x 5000
2000
1000
3400
W₁
300
300
D₁
300
BED ROOM 4000 x 3000
300
W
10900
BASIN
PASSAGE
D
B
3600
DRAWING HALL 4000 x 5000
300
D
300
W
TRUSS
W
D
VERANDAH 4000 x 3000
300 SQ. PILLARS
150 SLAB PROJECTION
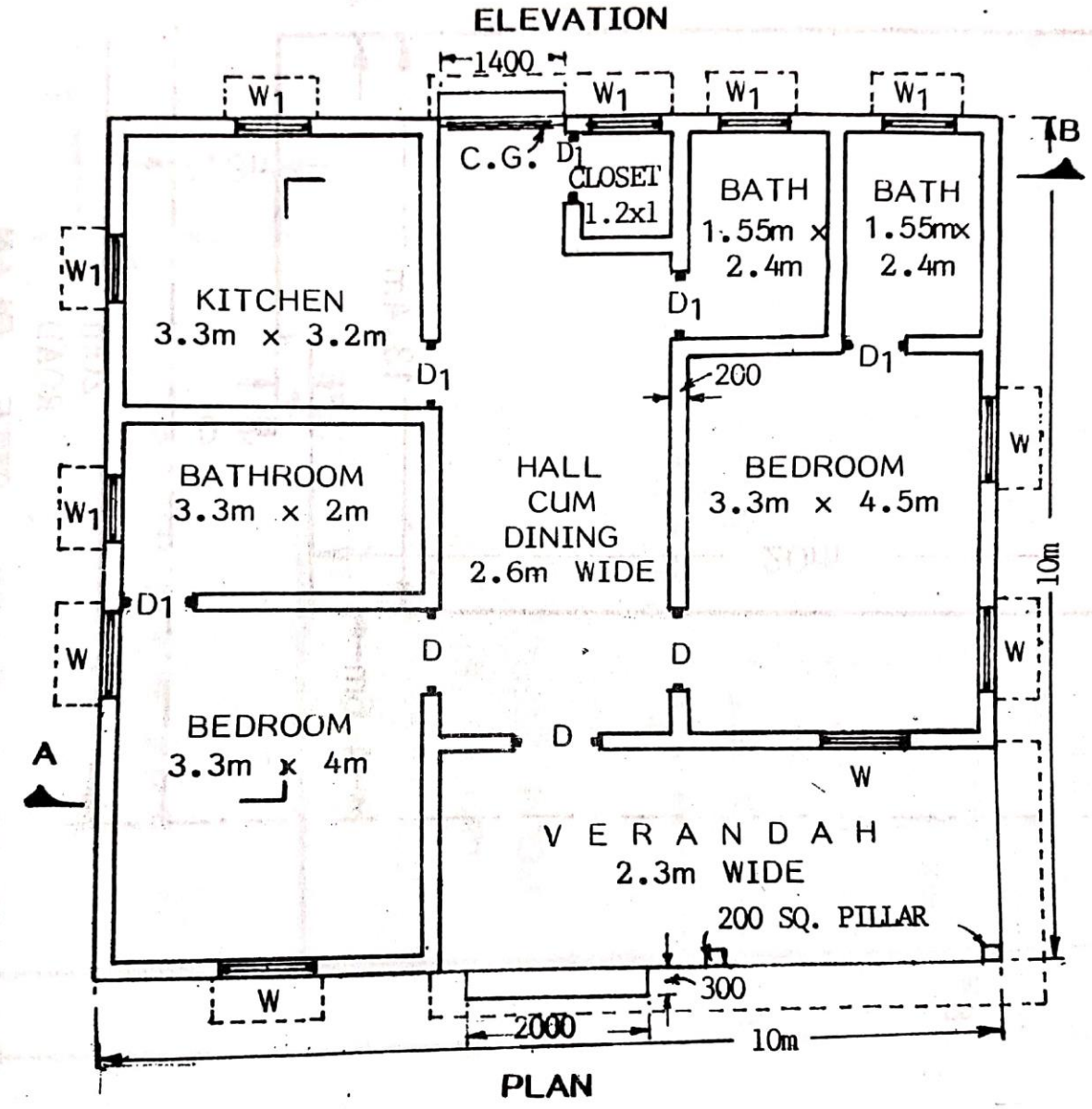600 CHAJJA PROJECTION
3000
A
W
D
900
4600
W
1200
4000
1600
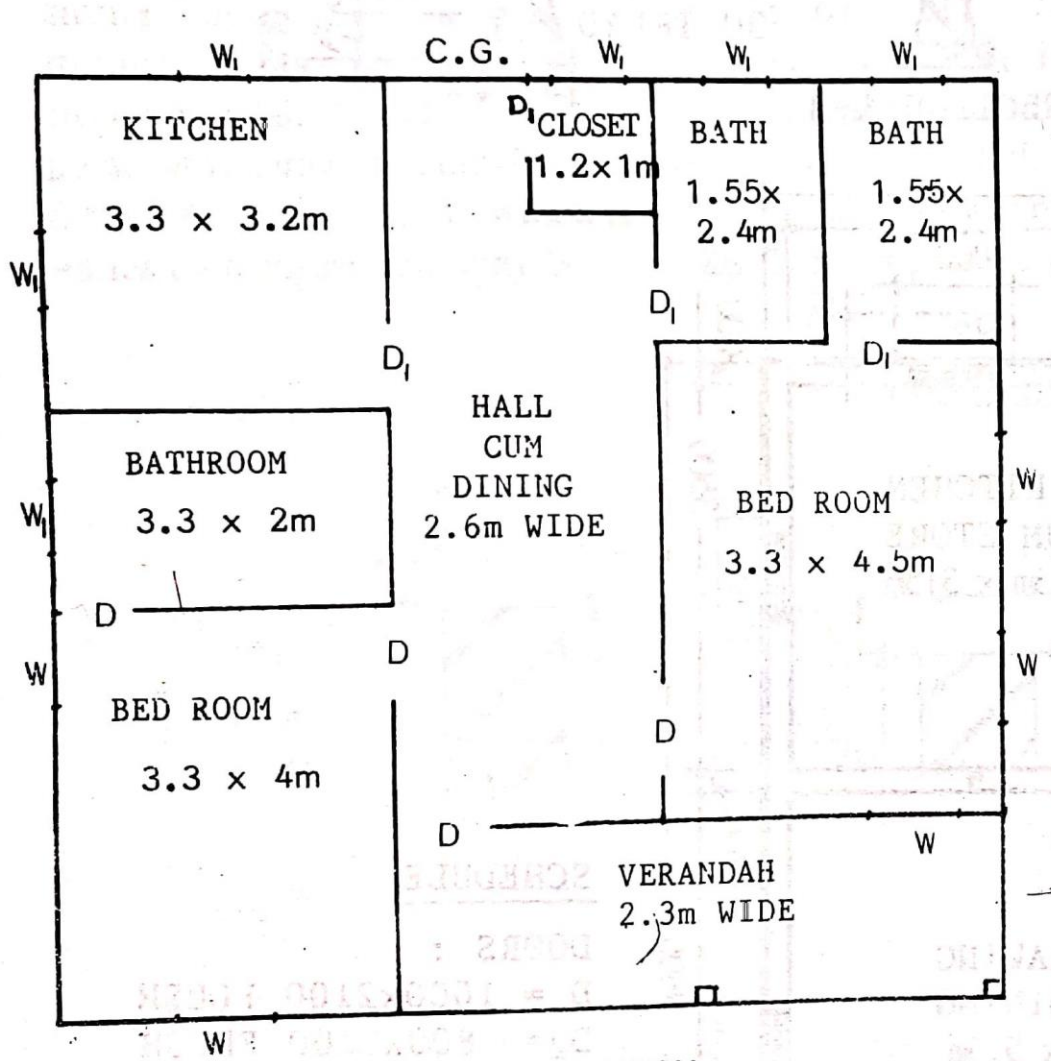
Chapter 4
Building Planning

4.1

Draw a 2BHK plan of plinth area of 100sq.m. The plinth area rate = 8000/sq.m.

LINE SKETCH

ELEVATION
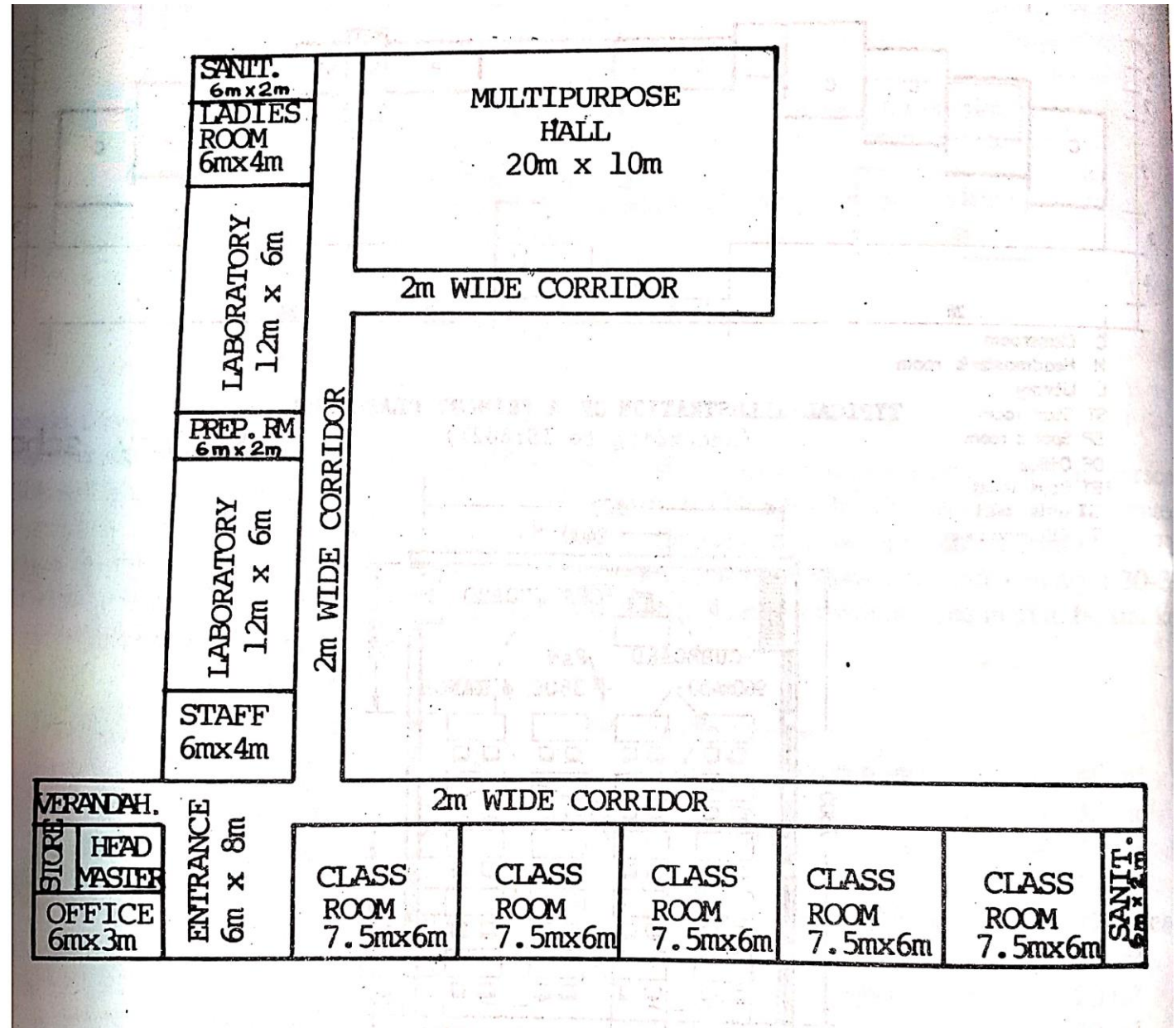
PLAN

4.2

Draw a 2BHK line diagram of building with location of opening and living areas with orientation.

LINE SKETCH

- W₁
- C.G.
- KITCHEN 3.3 × 3.2m
- D₁ CLOSET 1.2×1m
- BATH 1.55× 2.4m
- BATH 1.55× 2.4m
- D₁
- D₁
- BATHROOM 3.3 × 2m
- HALL CUM DINING 2.6m WIDE
- BED ROOM 3.3 × 4.5m
- D
- D
- BED ROOM 3.3 × 4m
- D
- VERANDAH 2.3m WIDE
- W

SITE PLAN
SCALE − 1:300

- 18m
- N
- 12.5m
- 24m
- 5m
- 10m
- 10m
- 5m
- 3m
- 1.5m
- ROAD
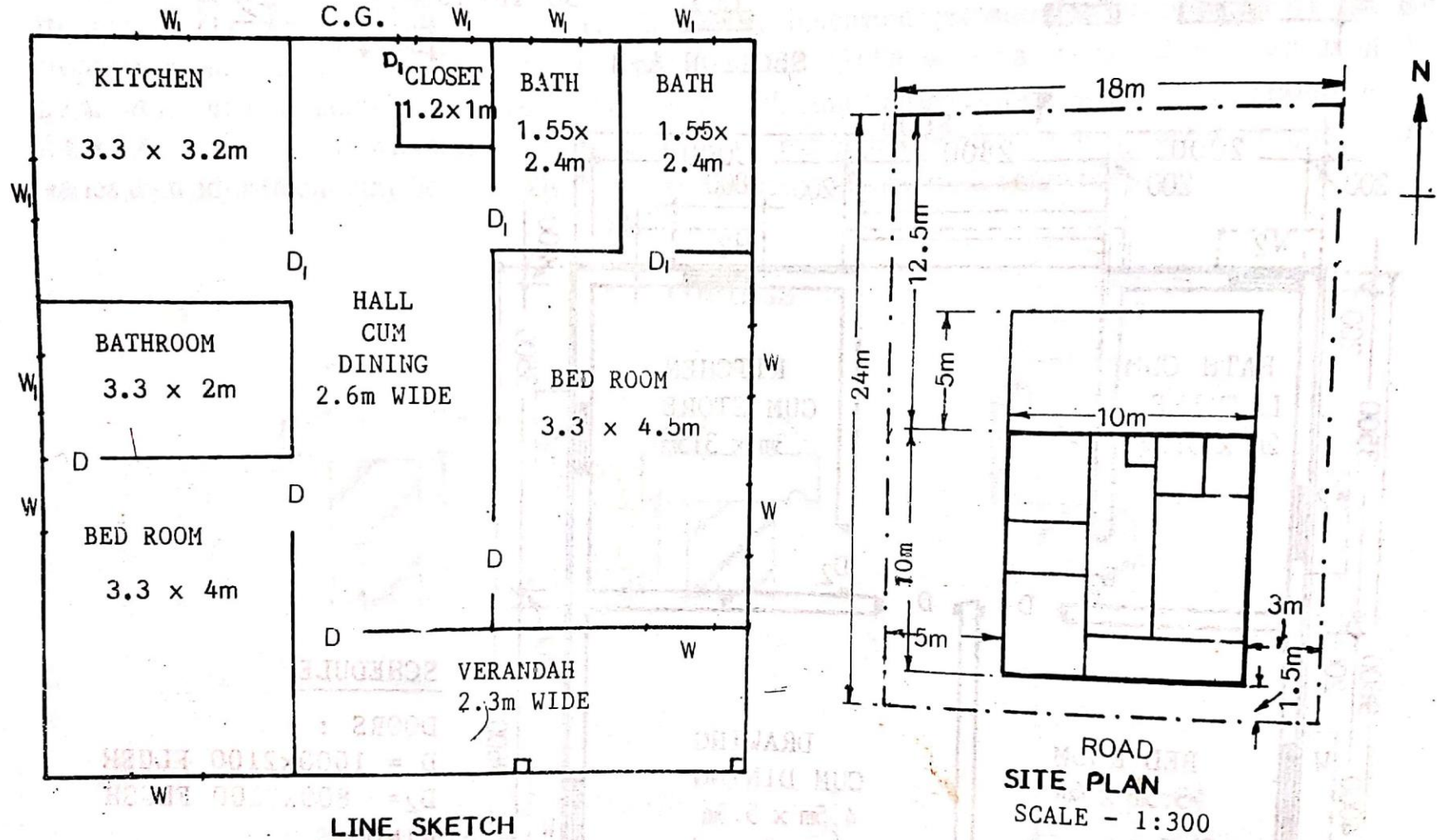
4.3

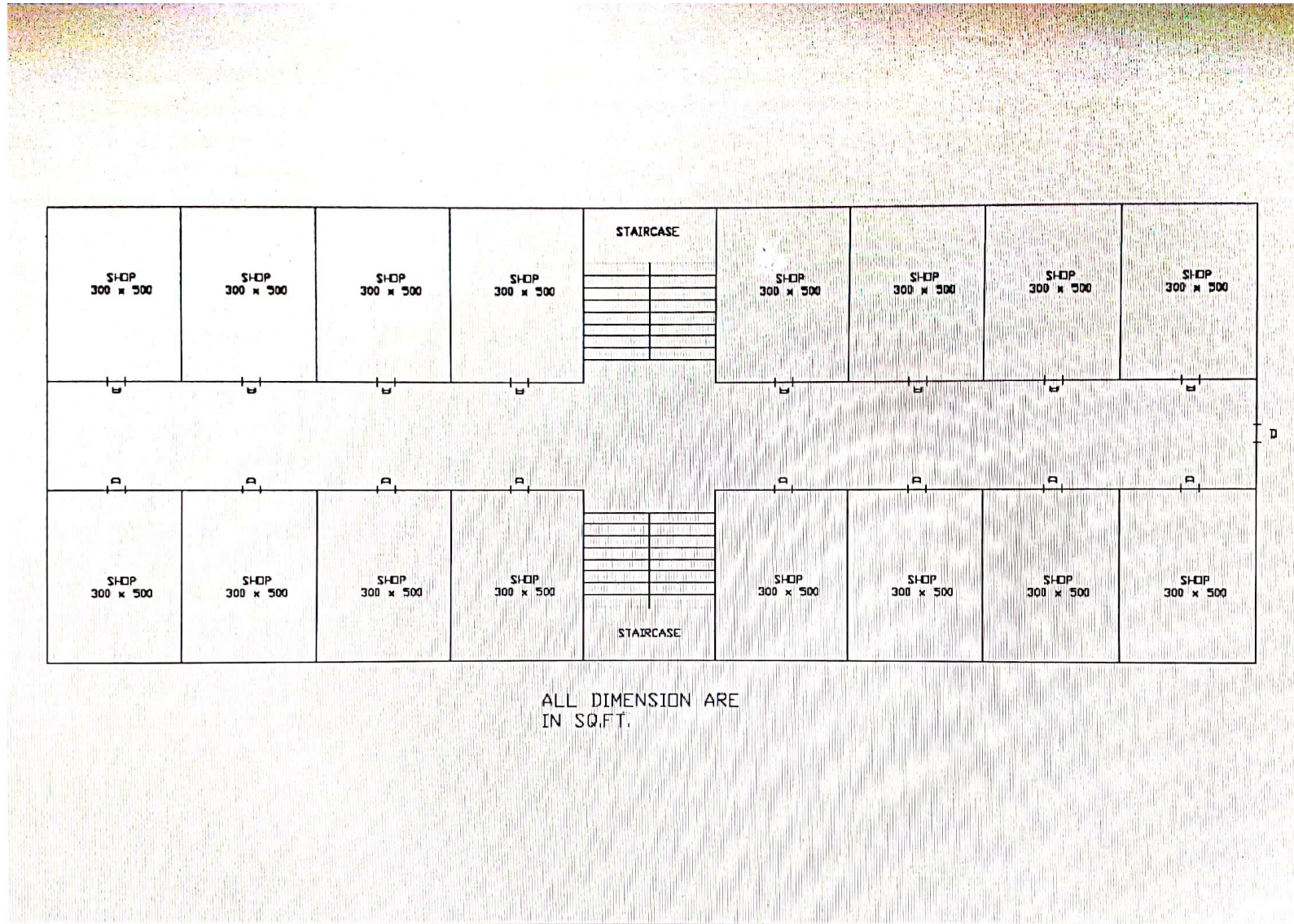Design of a School Building : Prepare a single line diagram for school with the following requirements.

1. Entrance Hall =48sq.m
2. 5 Nos. of class room =45sq.m each
3. Sanitary block (2 Nos.) = 12sq.m.
4. Headmaster and his office = 36sq.m
5. Staff room = 24sq.m
6. Laboratory (2 Nos.) =72sq.m
7. Preparation room =13sq.m.
8. Ladies room = 24sq.m.
9. Multipurpose Hall = 20sq.m.

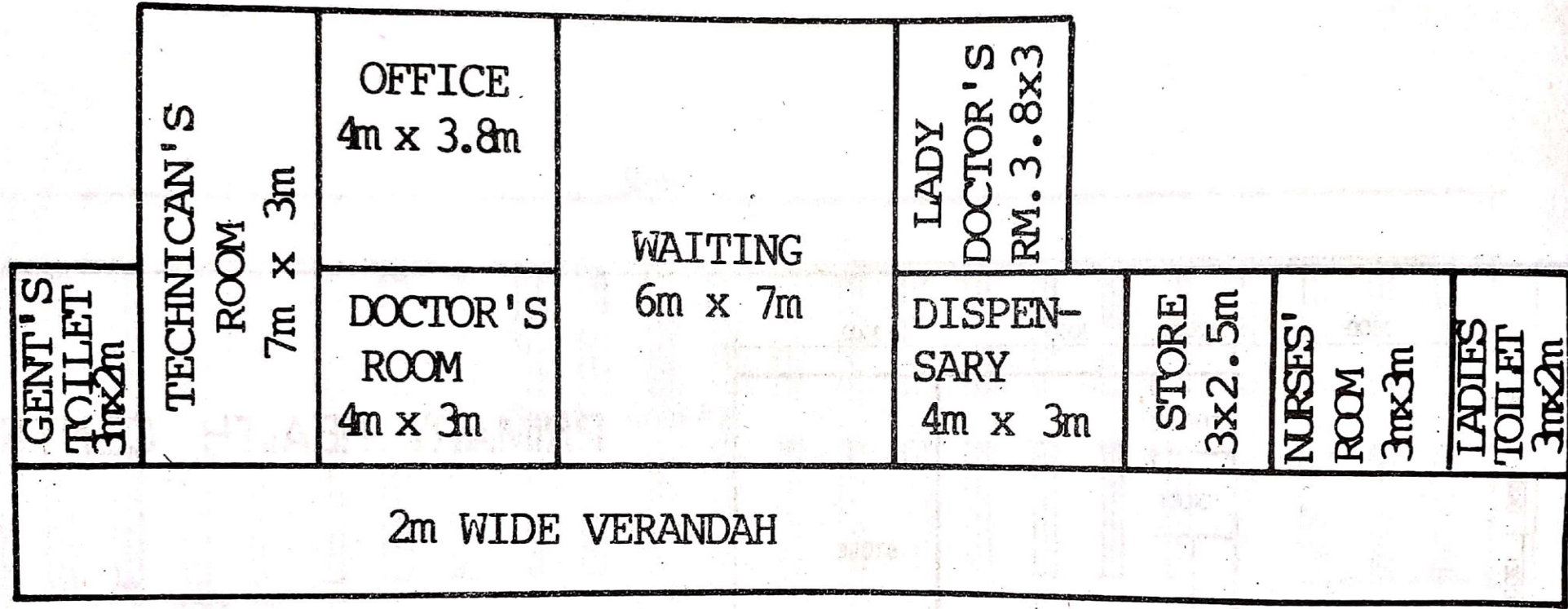Draw a hostel of 230 sq.m. having 50 Nos of bed in total building.
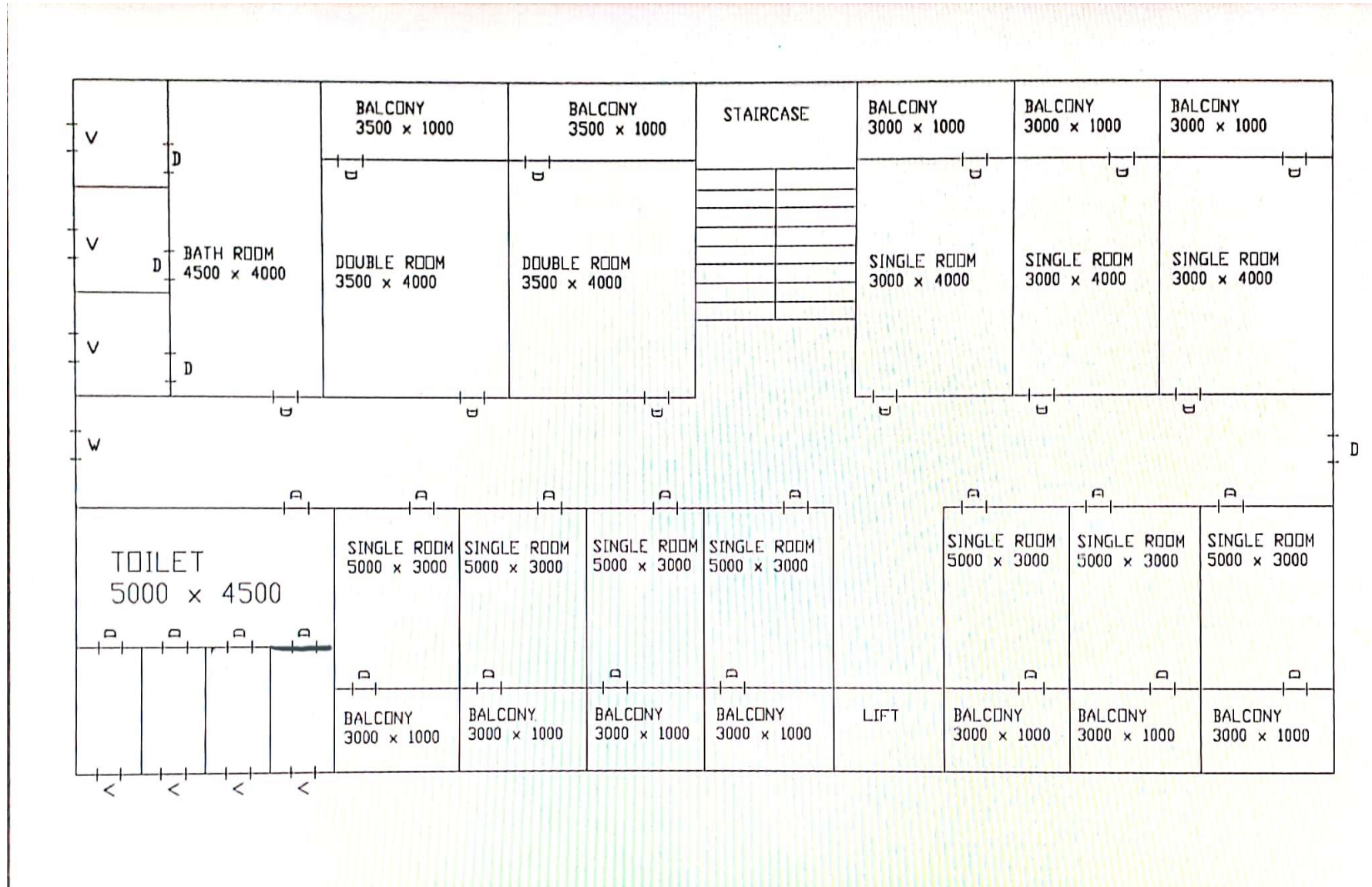
Draw a line plan of a market complex building having area of each shop = 300cm x 500cm size (No of room in a single floor =8).

STAIRCASE

| SHOP 300 x 500 | SHOP 300 x 500 | SHOP 300 x 500 | SHOP 300 x 500 | | SHOP 300 x 500 | SHOP 300 x 500 | SHOP 300 x 500 | SHOP 300 x 500 |

| SHOP 300 x 500 | SHOP 300 x 500 | SHOP 300 x 500 | SHOP 300 x 500 | | SHOP 300 x 500 | SHOP 300 x 500 | SHOP 300 x 500 | SHOP 300 x 500 |

STAIRCASE

ALL DIMENSION ARE
IN SQ.FT.

Prepare a single line diagram for a Health Centre with the following rerequirements.
1. Waiting hall = 42sq.m.
2. Office =15wq.m.
3. Doctors room = 12sq.m.
4. Technician's room = 20sq.m.
5. Lady doctor's room = 12sq.m
6. Dispensary =12sq.m
7. Store = 7.5sq.m.
8. Nurse's room = 9sq.m.
9. 2Nos. of General toilets, one fir Gents & other for Ladies (suitable).
10. Generous Verandah.

| GENT'S TOILET 3m×2m | TECHNICAN'S ROOM 7m × 3m | OFFICE 4m × 3.8m | WAITING 6m × 7m | LADY DOCTOR'S RM. 3.8×3 | | | |
| | | DOCTOR'S ROOM 4m × 3m | | DISPEN-SARY 4m × 3m | STORE 3x2.5m | NURSES' ROOM 3m×3m | LADIES TOILET 3m×2m |

2m WIDE VERANDAH

SCALE - 1:200