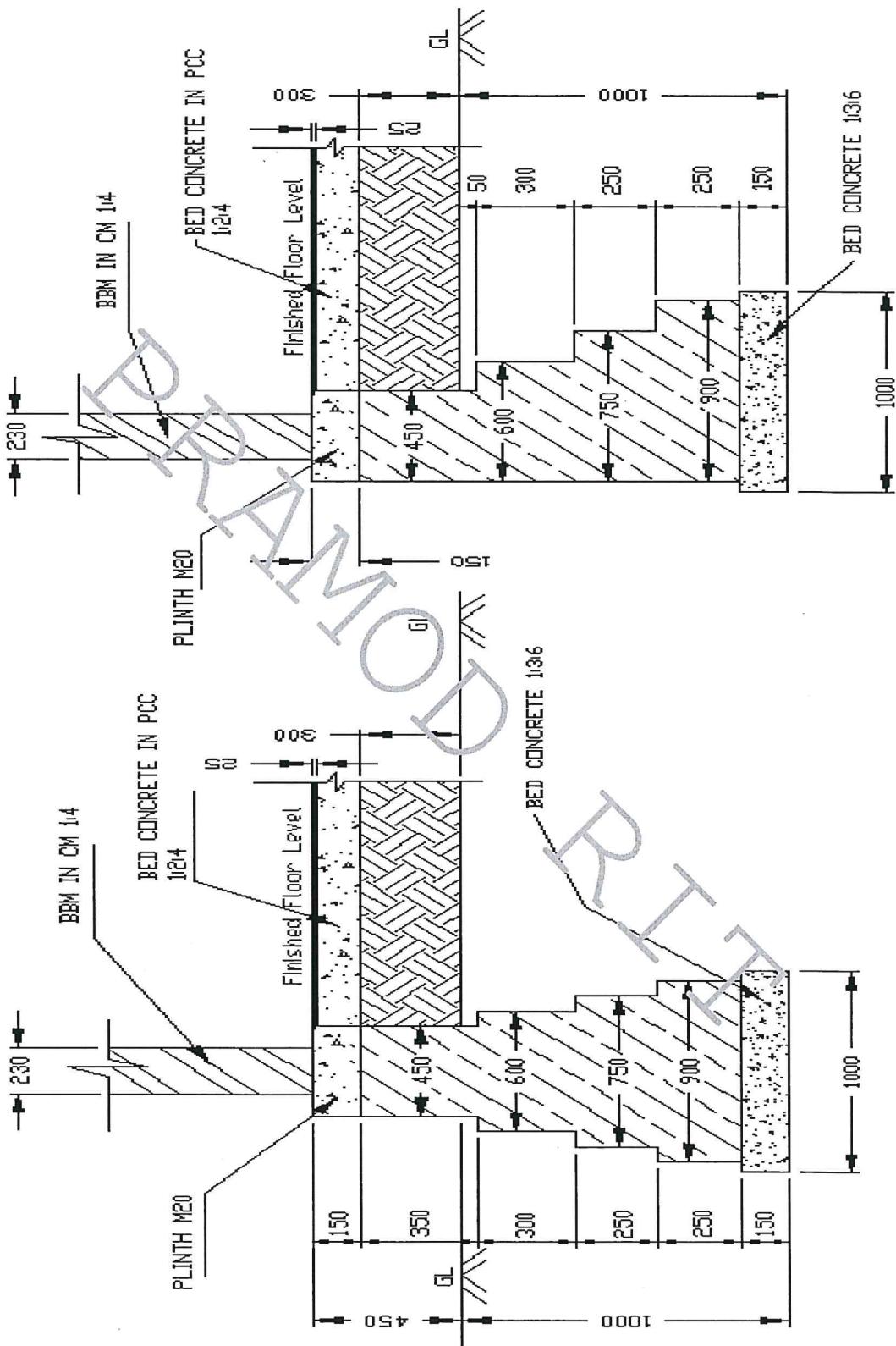


## FOOTINGS

### Stepped Wall Footing At Edge



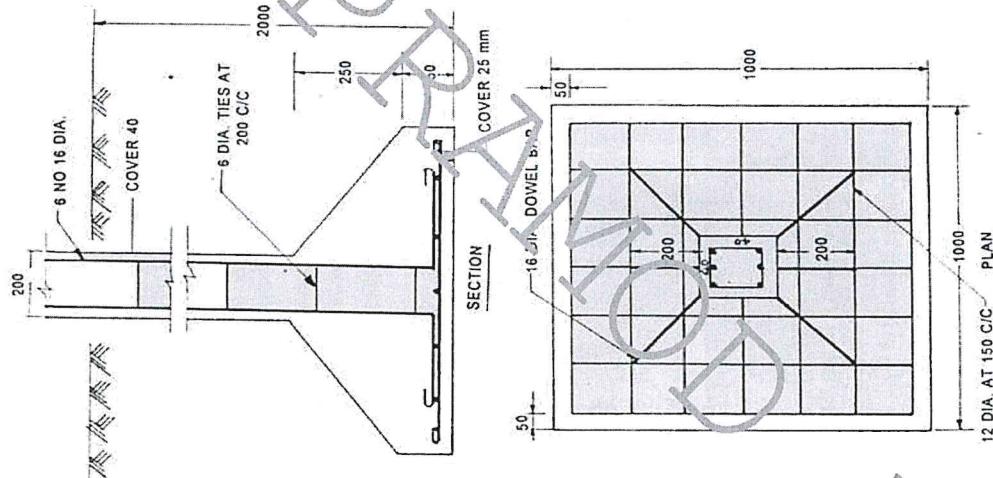
## ISOLATED FOUNDATIONS-

A footing supporting a single column is called an isolated footing, shallow foundation Footing or a *spread* footing.

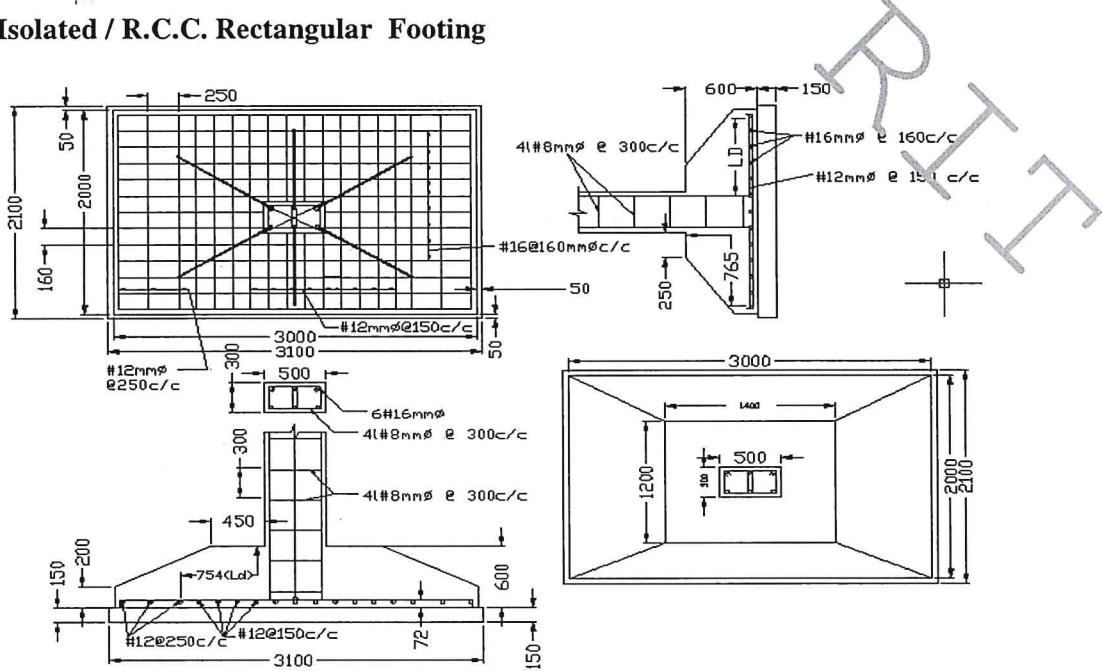
Normally used for good bearing capacity, Individual Square, Rectangle or Circular pads under columns. In this case only steel at bottom is sufficient to resist up lift force. As a rule, concrete, when of sufficient depth and width, and when properly made and laid, make the best footing course. Concrete for footings should be made of 1 part good cement, 3 parts of clean, sharp sand, and 6 parts sharp, broken stone. In very important work, such as bridge piers and the footings of very tall buildings, chimneys, etc. a mixture consisting of 1 part cement, 2 parts of sand and 4 parts of broken stone is sometimes used. The building laws call for 1 part cement, 3 parts sand and 5 parts broken stone.

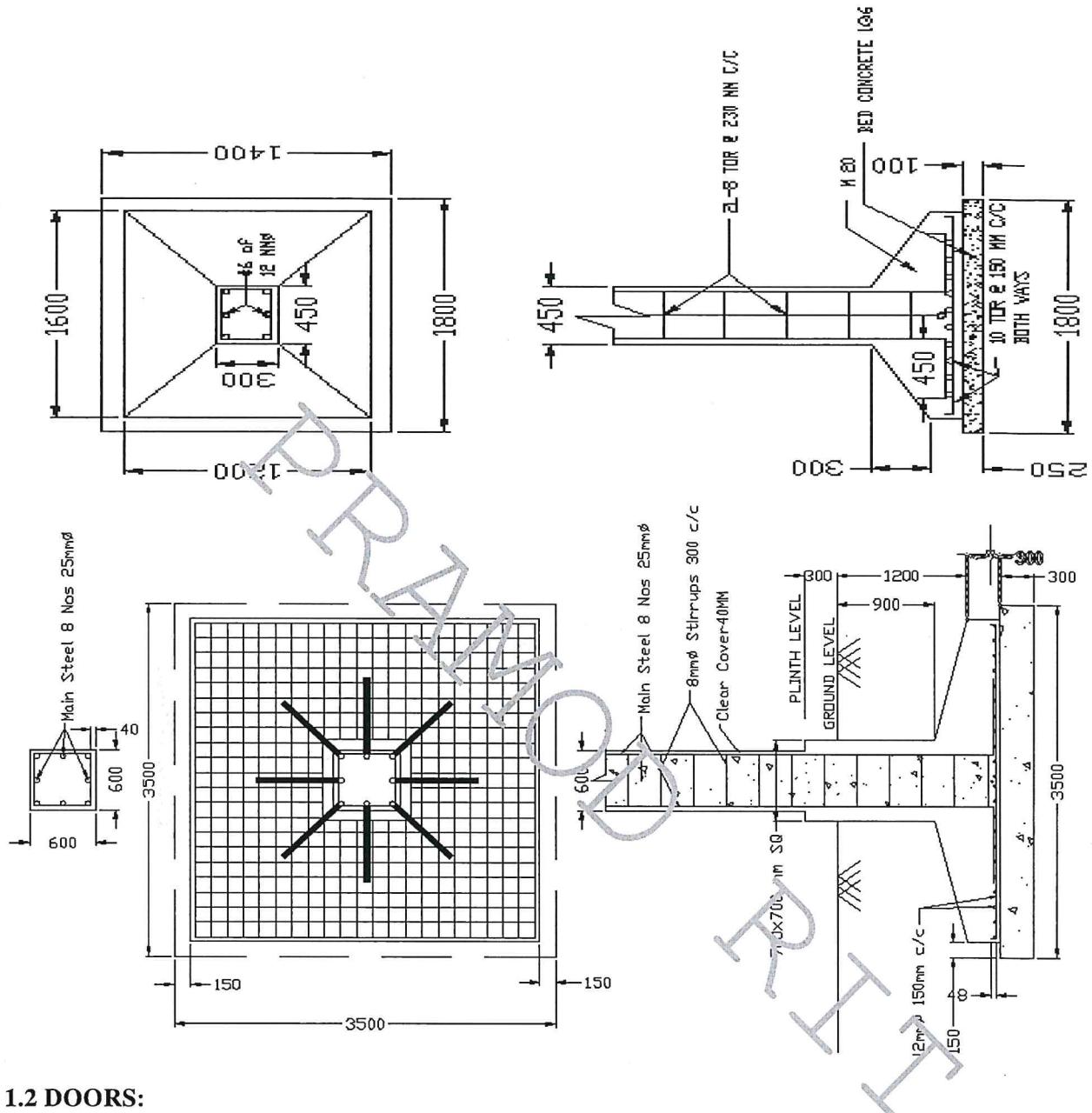
### PRACTICAL 2 : Draw the following ISOLATED COLUMN / R.C.C COLUMN

#### 1) Isolated / R.C.C. Square Footing



#### Isolated / R.C.C. Rectangular Footing





## 1.2 DOORS:

Doors are the means to provide access to the rooms of a building. A door consists of a frame and one or two shutters or leaves. Accordingly they are called as single shuttered or double shuttered door. Door frame consists of two vertical members called styles and two horizontal members' one at top called top rail and one bottom rail or sill or threshold. Now-a-days the bottom rail is omitted and made to flush with floor level. The top tail is projected beyond the styles by about 150mm and these projections are known as horns. These are built into masonry fro keeping in position. M.S. Clamps of flat iron about 300mm × 50mm × 6mm are fixed to the vertical styles on the outerside known as "Hold Fasts" in the shape of letter 'Z'. These are embedded into the masonry wall to hold the frame in position. When bottom member (sill) is not provided, the vertical members (styles) should be inserted in the floor finish by about 40 mm to 50mm Shutter for the door frame may be fully panelled or partly glazed and partially panelled with one or two leaves or shutters. In fully paneled shutter the no. of panels may be 3,4 or 6 as per the design and other practical considerations. In the case of door

shutters, the horizontal members are called as rails (top, bottom, lock and frieze). All other rails fixed between the lock rail and top rail are called frieze rail. The continuous vertical members of door frame called as styles or stiles. These styles and rails jointed to each other at both ends by mortise and tenon joints. The bottom and lock rails are made wider than the top or frieze rails. The center of the lock rail shall be so placed that its center line is at a height of 850mm from the bottom of the shutter. The joints between the panel and frame shall be tongued and grooved joints. Grooves are formed along the inner edges of the stiles and rails to receive the panel. The depth of groove is equal to the thickness of panel. As per IS1003; the minimum width and thickness of panel shall be 100mm and 15mm respectively. For double leaf shutter, when closed, one leaf overlaps the other vertically as a rebated joint. In order to keep the both shutters in the same plane, rebates 8 to 10mm wide and in depth equal to half thickness of a shutter for a square type are cut as for IS:6198.

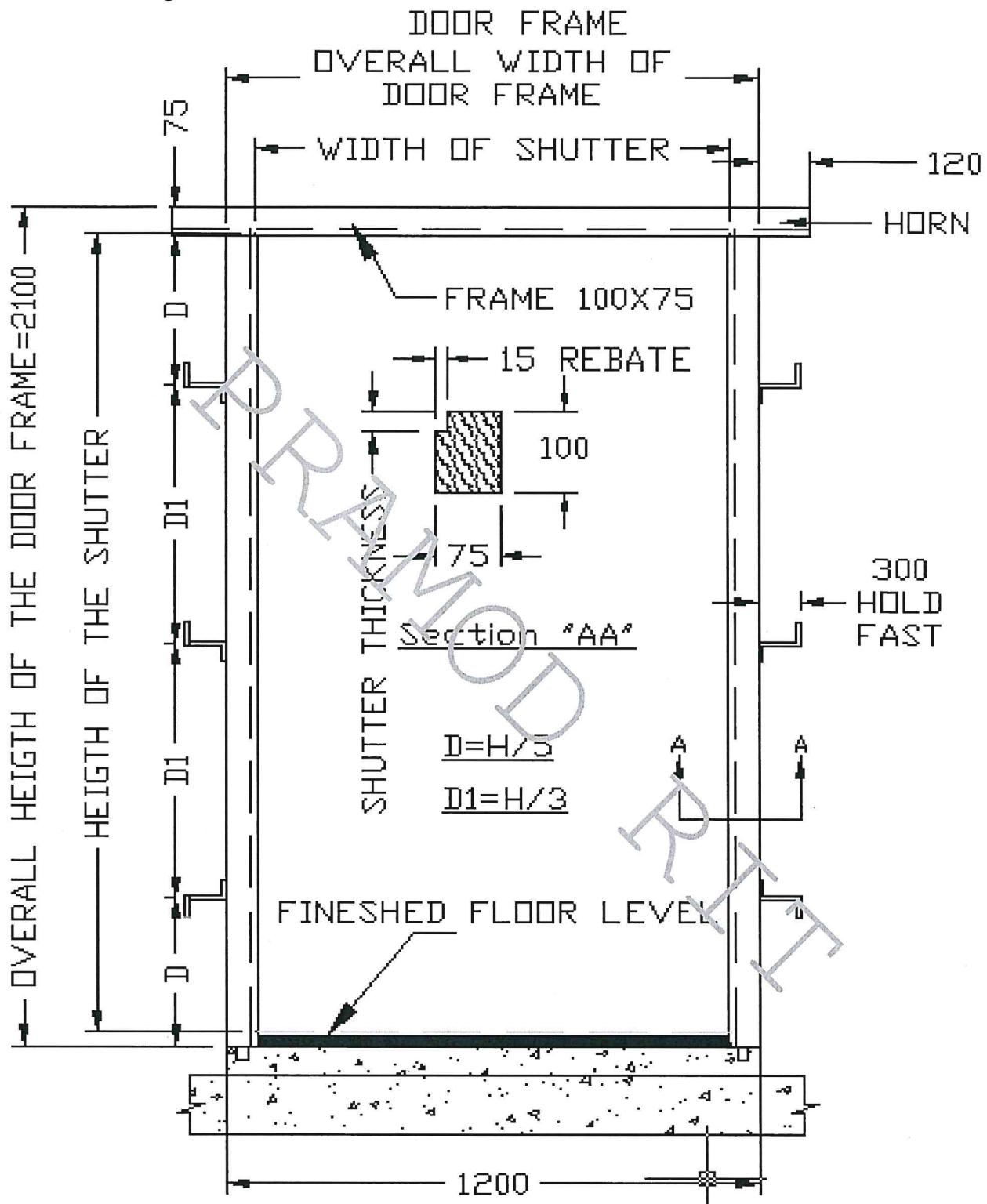
**I.S.1003 RECOMMENDED SIZES FOR DOORS AND WINDOWS:**

- a) Vertical stile, top and frieze rail width :  $150 \pm 3\text{mm}$
- b) Lock rail width :  $150 \pm 3\text{mm}$
- c) Bottom rail width :  $100 \pm 3\text{mm}$
- d) Mounting width :  $100 \pm 3\text{mm}$
- e) Glazing bar :  $40 \pm 1\text{mm}$
- f) Thickness for all members :  $35 \pm 1$  or  $40 \pm 1\text{mm}$

As per detailed standard specifications) doors and windows are indicated by following letters.

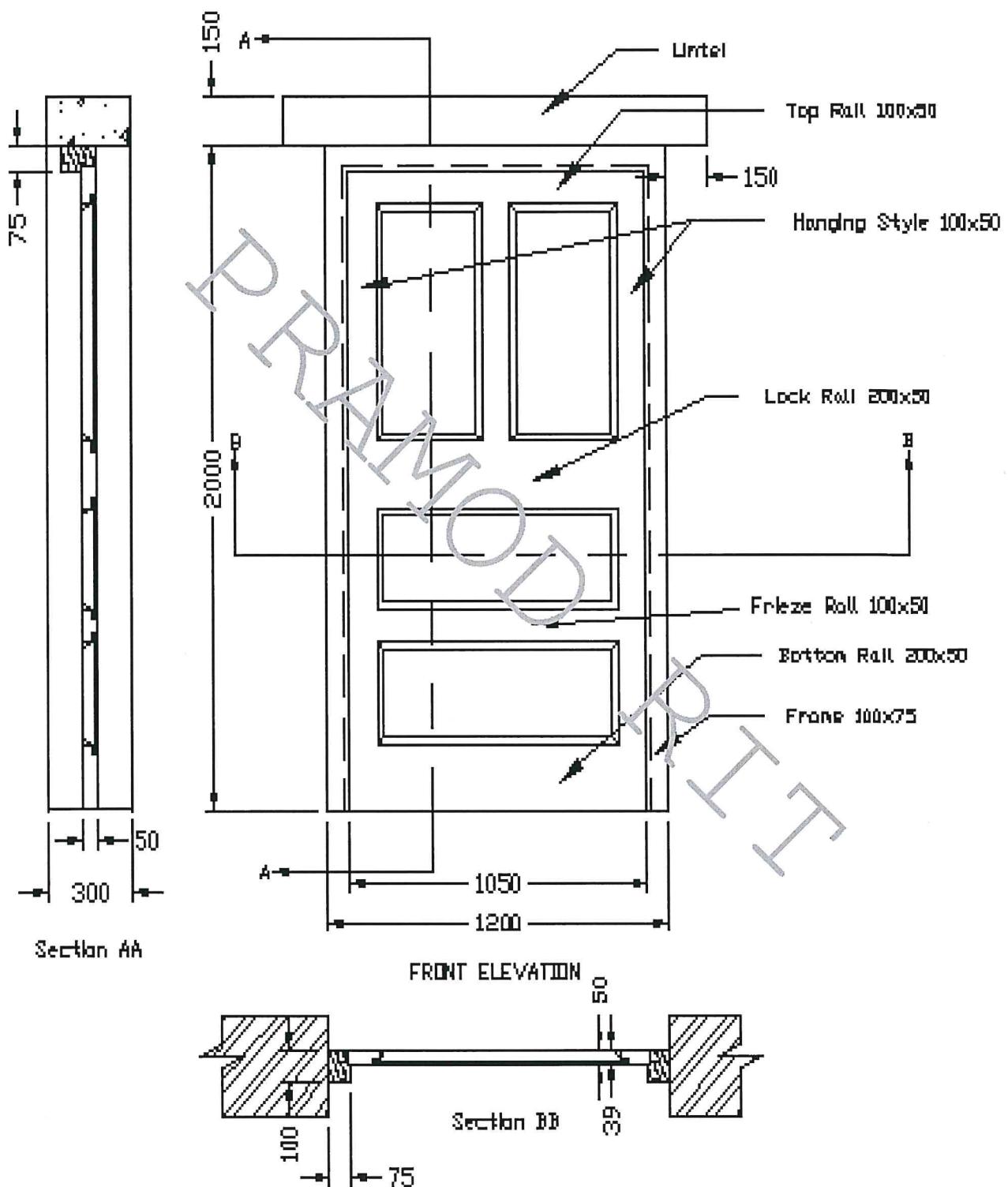
D = Door W = Window V = Ventilator S = Single shutter T = Double Shutter P = Two Panels  
R = Three Panels Q = Four Panels

Draw the following DOOR FRAME

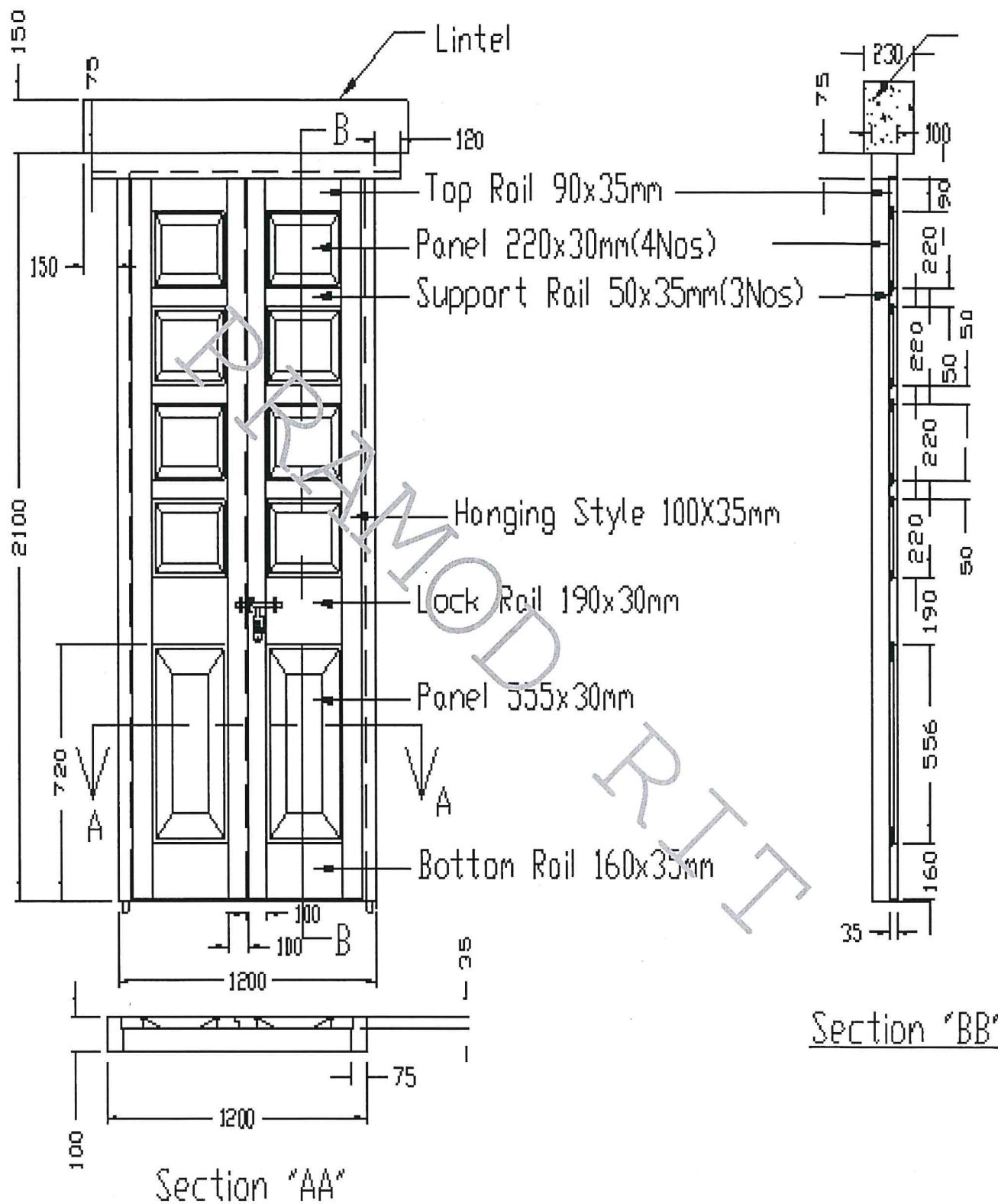


Draw the following PANELLED DOOR WITH FRAME

## Single Shutter Door Panelled and With Frame



## Double Shutter Door Panel and With Frame



## RECOMMENDED OPENING SIZES – DOORS

S. No.	Type	Location	Shutter Size	Masonry Opening Size	Frame	Shutter
1	D1	Entrance Room 1	1100 x 2045	1200 x 2100	Wood	Internal Shutter - Solid Core Flush / Panel External Shutter - Grill Shutter
2	D2	Entrance Room 2	1000 x 2045	1100 x 2100	Wood	Internal Shutter - Solid Core Flush / Panel External Shutter - Grill Shutter
3	D3	Room Door 1	900 x 2045	1000 x 2100	Wood	Solid Core Flush Shutter or Panel Shutter
4	D4	Room Door 2	800 x 2045	900 x 2100	Wood	Solid Core Flush Shutter or Panel Shutter
5	D5	Kitchen & Store	800 x 2045	900 x 2100	Wood	Partly Panel and Partly Wire Mesh Shutter
6	D6	Toilet	650 x 2045	750 x 2100	Wood	1. Panel Shutter 2. Solid PVC Shutter

### Block board

Block board is a wood based panel, made up of a core of softwood strips glued together. The strips may be up to about 25mm wide and are placed edge to edge and sandwiched between veneers of softwood, hardwood or thin MDF or particleboard, glued under high pressure. The internal strips are generally made of light weight poplar wood or spruce.

Block board is not suitable for outdoor use because the glues used are interior glues. Block board is used to make doors, tables, shelves, paneling and partition walls. It is normally used for interior usages, due to the type of glues used. To achieve maximum strength, it is important to ensure that the core runs lengthways. Block board (also called lumber core) has very good screw holding and can be considered as solid wood; it has a good resistance to warping.

Block board panels are produced in 3-layers, with one veneer sheet (or thin MDF or particlebaord) covering each side, or 5-layers with two veneer sheets per side for better stability.

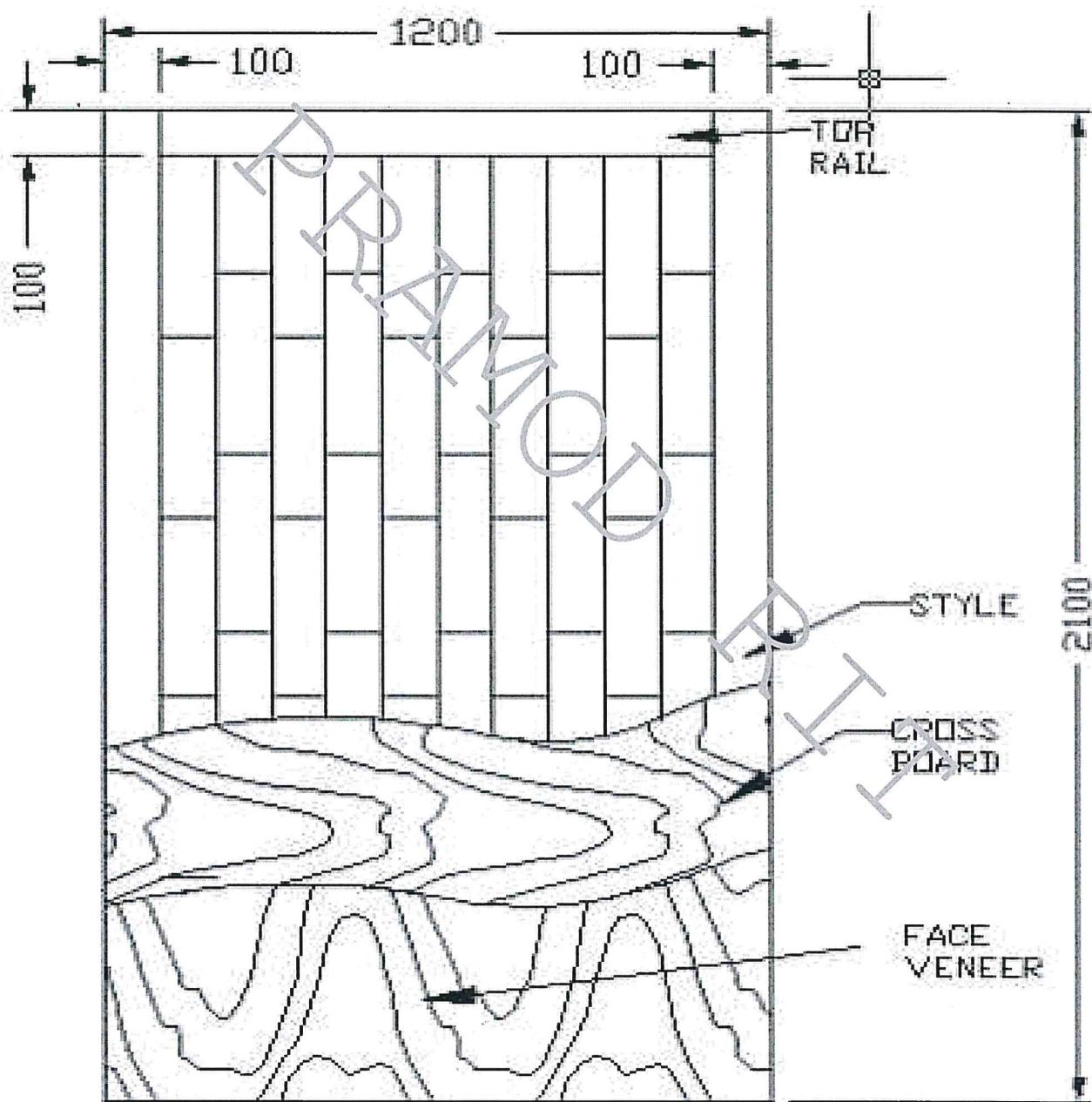
Most common sizes in blockboard is sold in sheets of 2440 x 1220mm and are normally 30mm thick

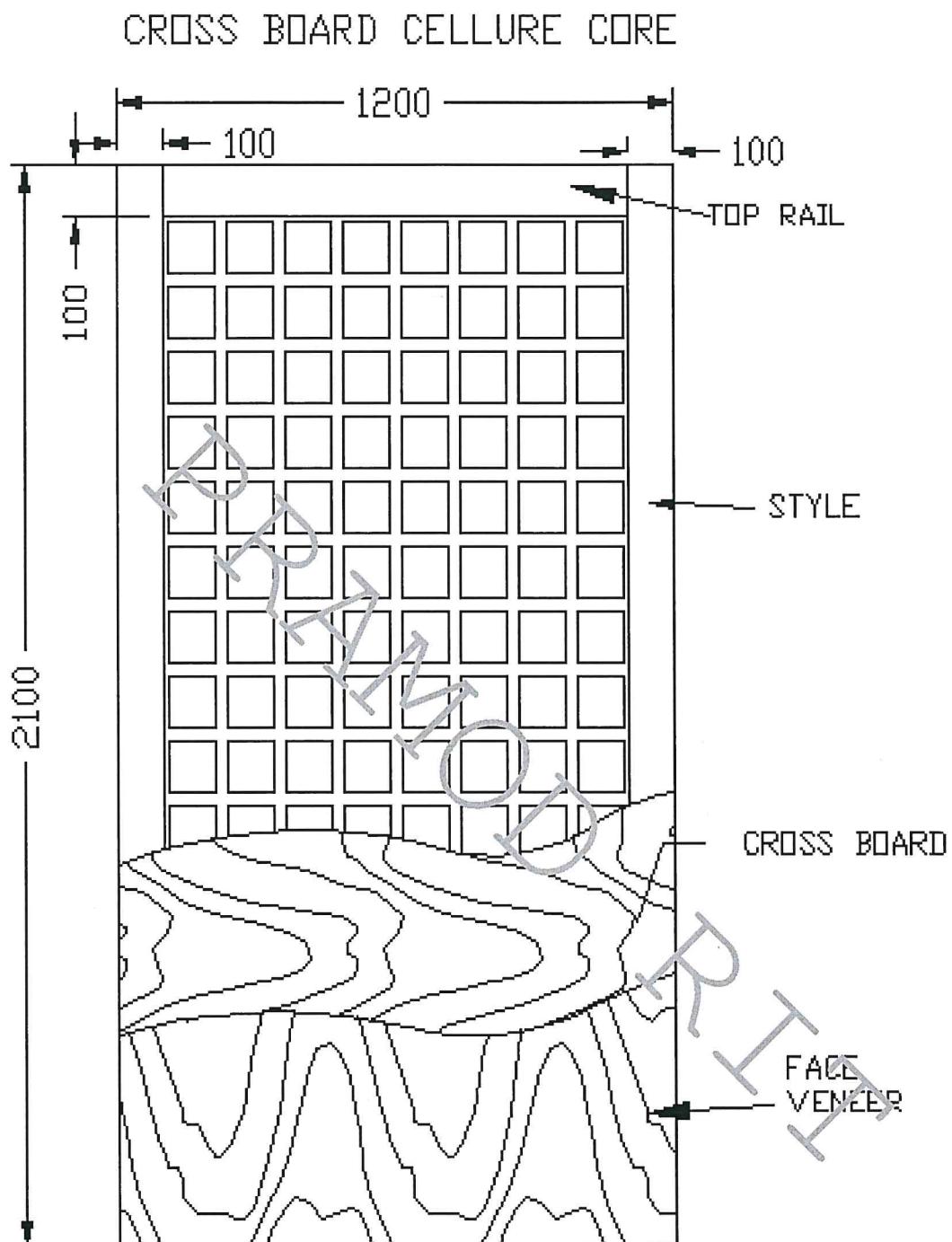
Block board may be purchased with a variety of applied finishes such as wood veneers, melamine paper and plastic laminate surfaces.

Sizes: - Block board is sold in sheets of 2440 x 1220mm and are normally 30mm thick.

**PRACTICAL 5 : Draw the following BLOCK BOARD**

**BLOCK BOARD**

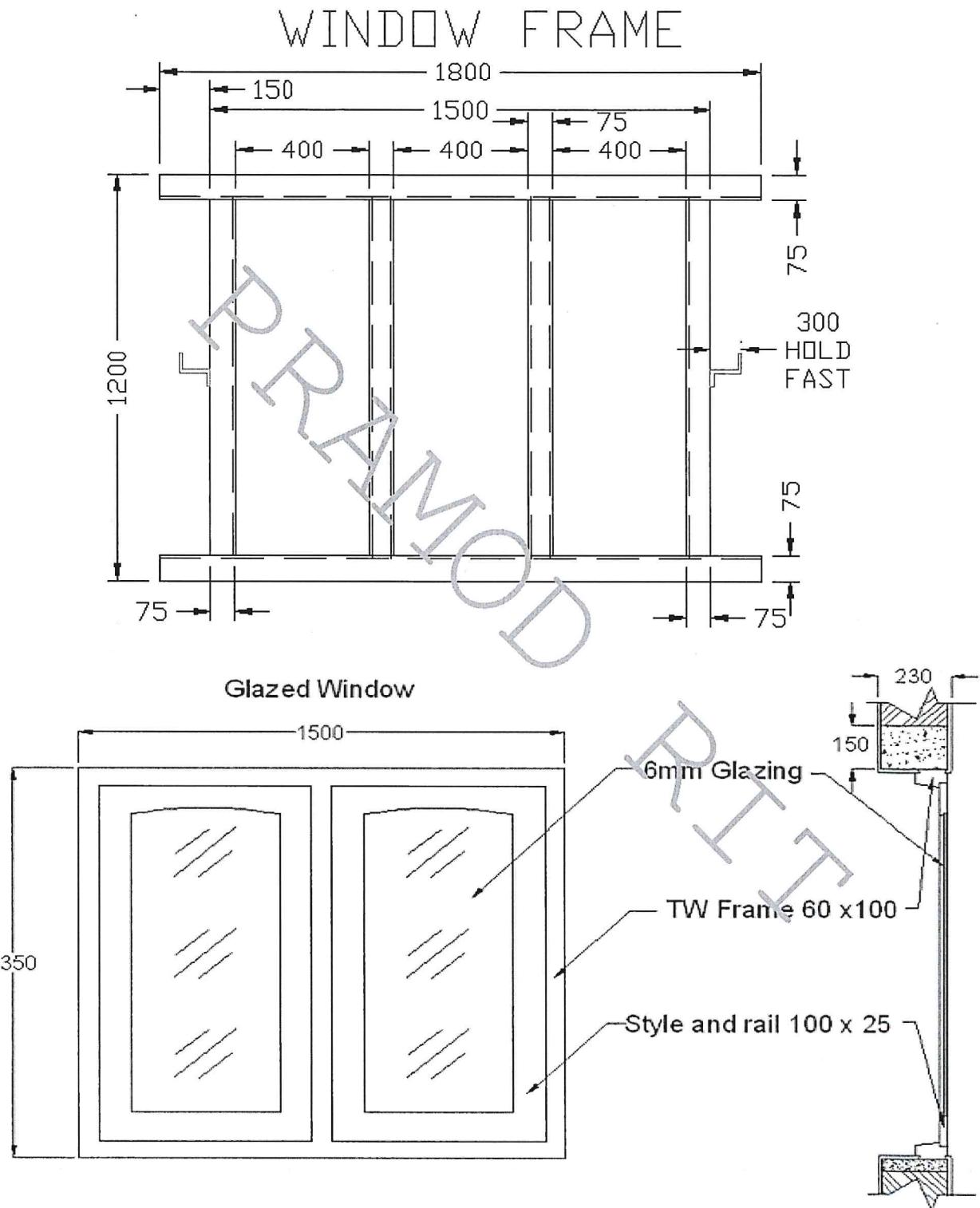


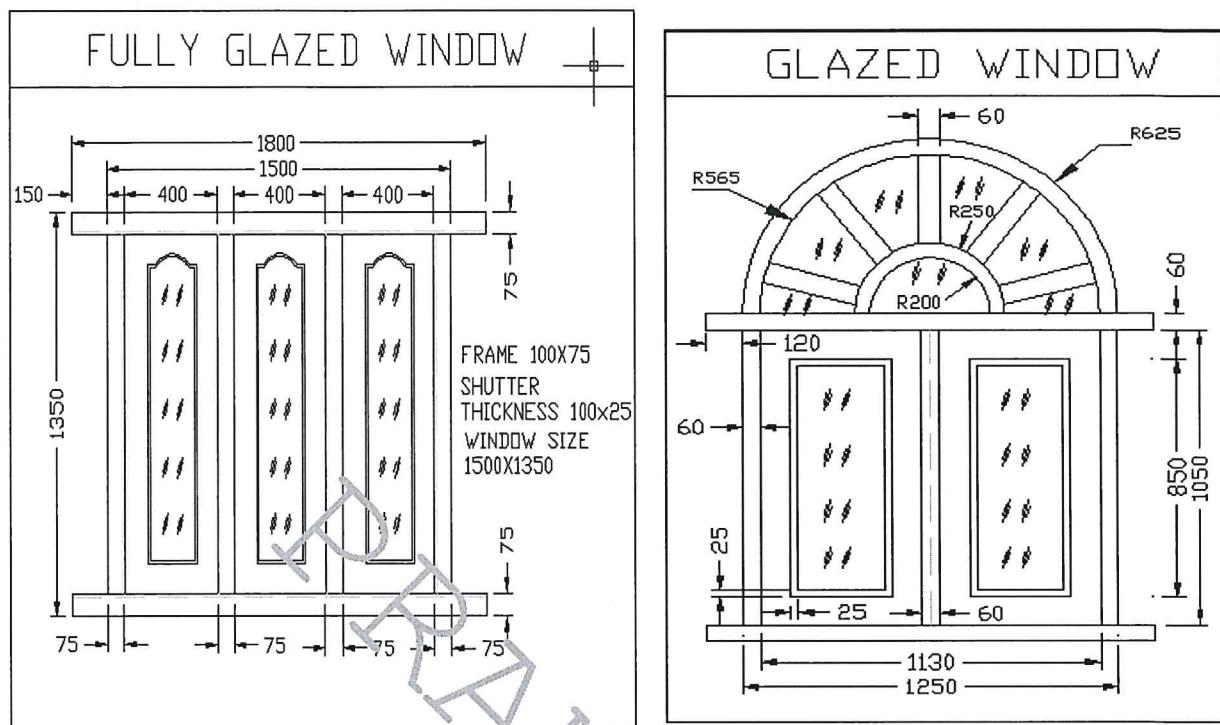


### PRACTICAL 5 - Fully Glazed Window

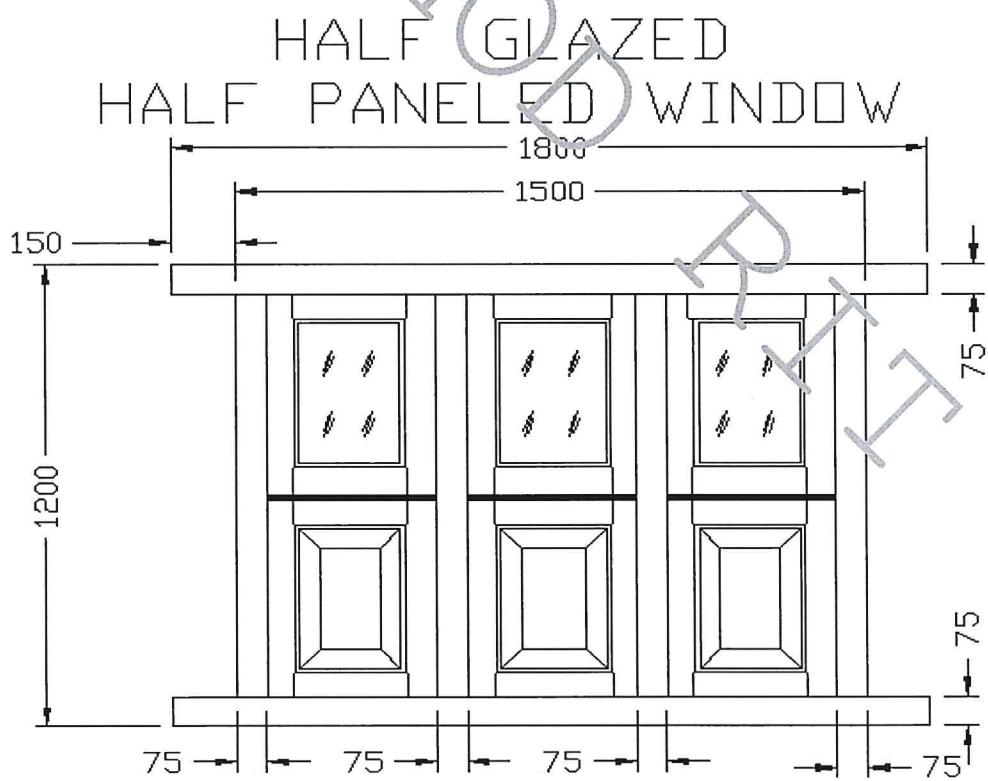
Insulated glazing (IG) also known as double glazing are double or triple glass window panes separated by an air or other gas filled space to reduce heat transfer across a part of the building envelope.

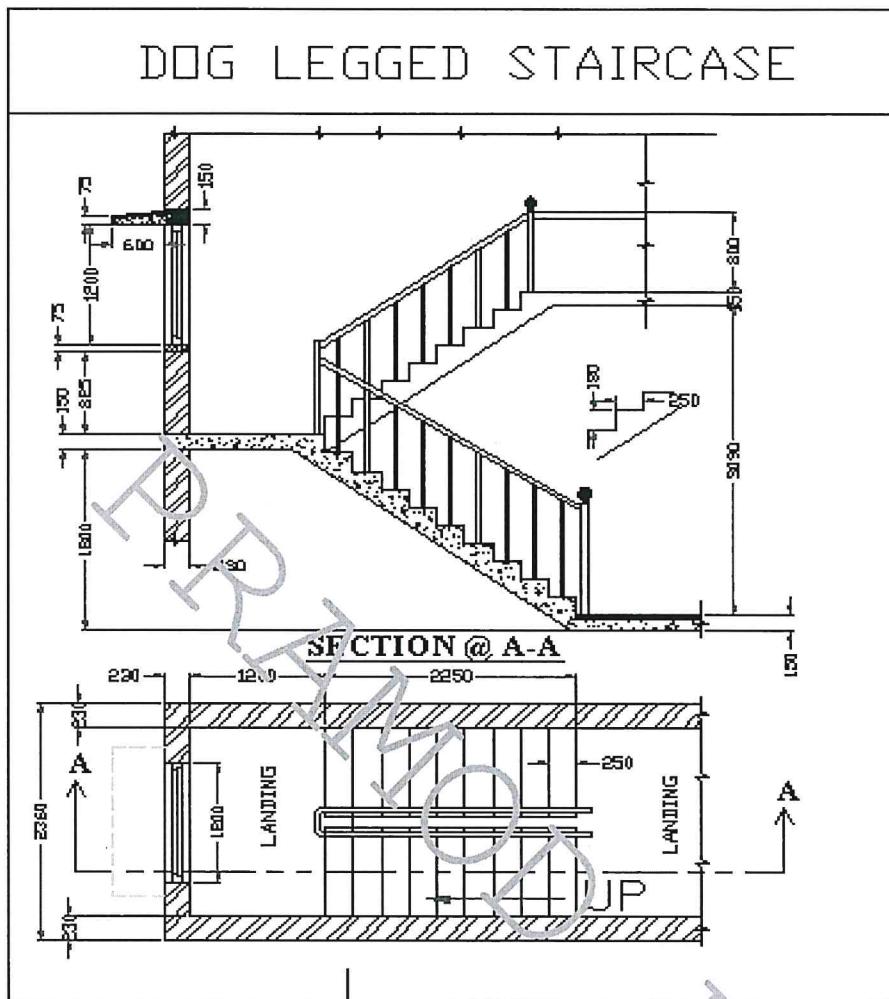
Glass in windows is used to provide light and allow a view from either side to the other side. While the composition and manufacturing of glass is covered elsewhere, for the purposes of this article, its importance to the construction is its dimensional stability over a wide temperature range.



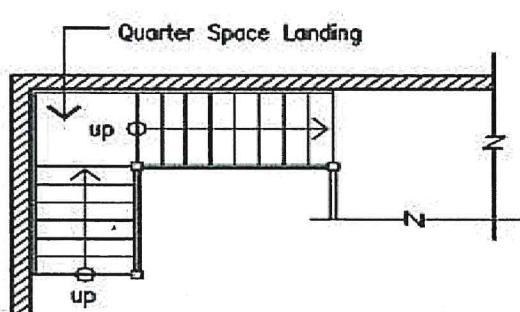


**Half Glazed and half paneled Window**

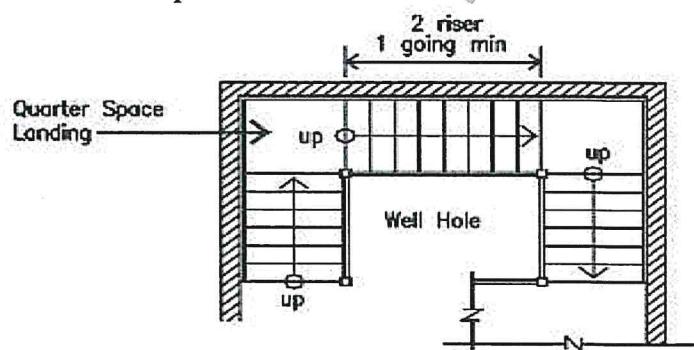


**Dog Legged Staircase****OPEN NEWEL STAIRCASE**

SN A staircase, usually rising through more than one storey, with a space at its centre around which the stair is carried by strings and newels. Consists of 2 or more straight flights arranged in such a manner that clear space "well" is present between the backward & forward flights  
"well" can be either square or rectangular or curved in shape

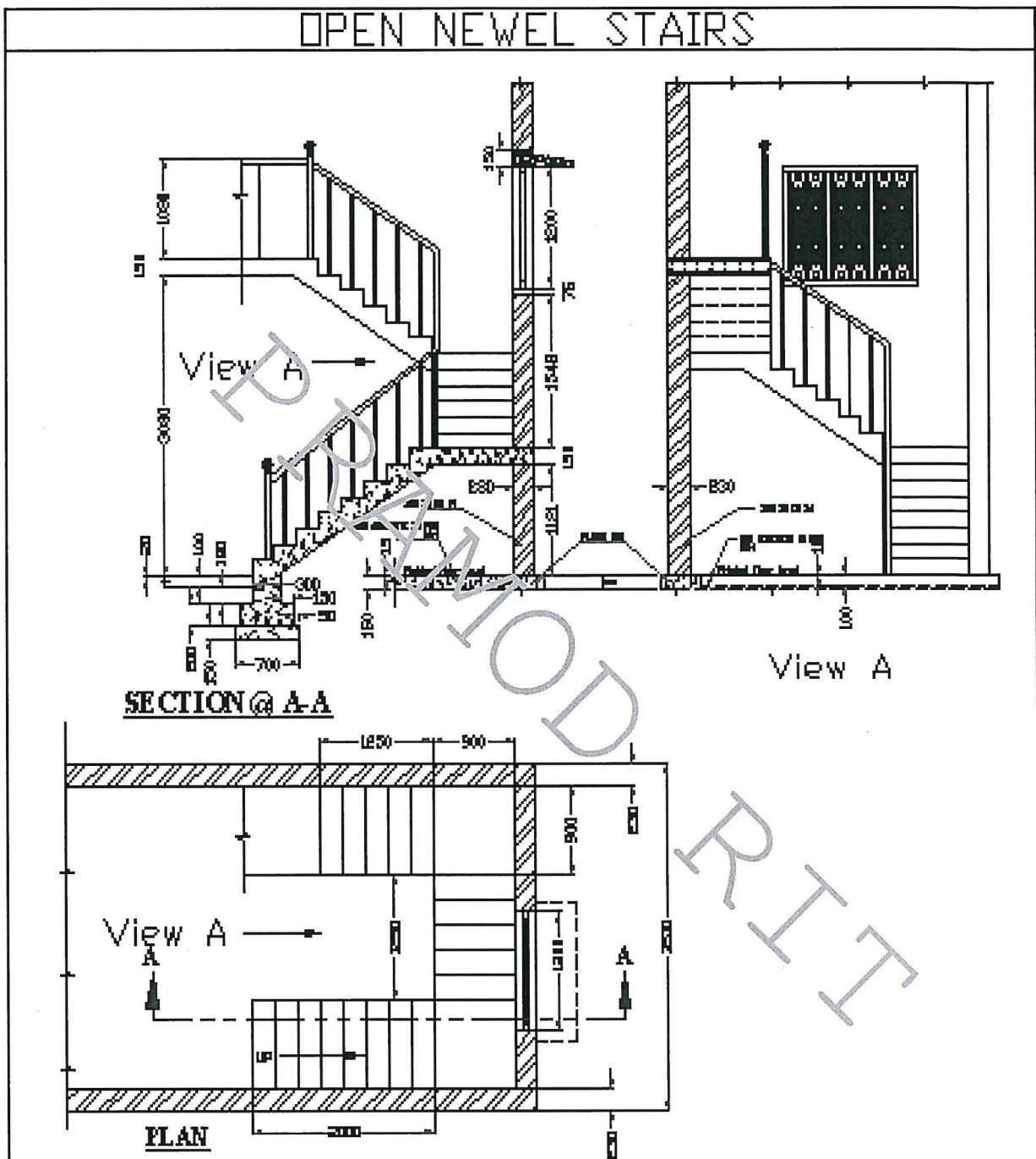


Newel Stair with Quarter Space Landing



Open Well Newel Stair with Quarter Space Landing

PRACTICAL 9 – Open Newel Staircase

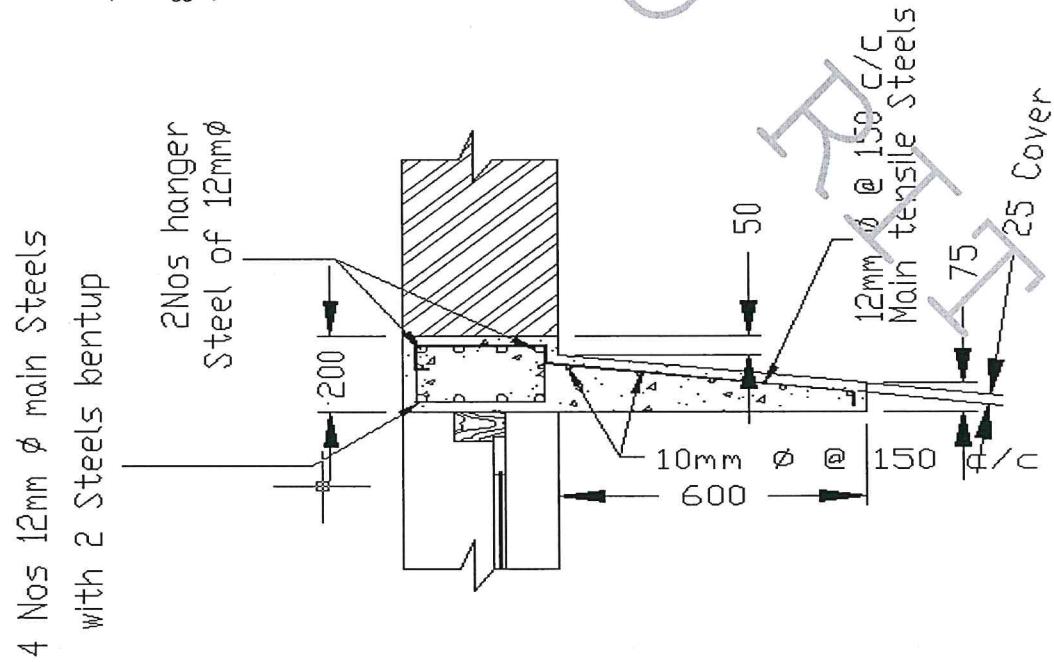


## Sun Shade (Chajja) and Lintel

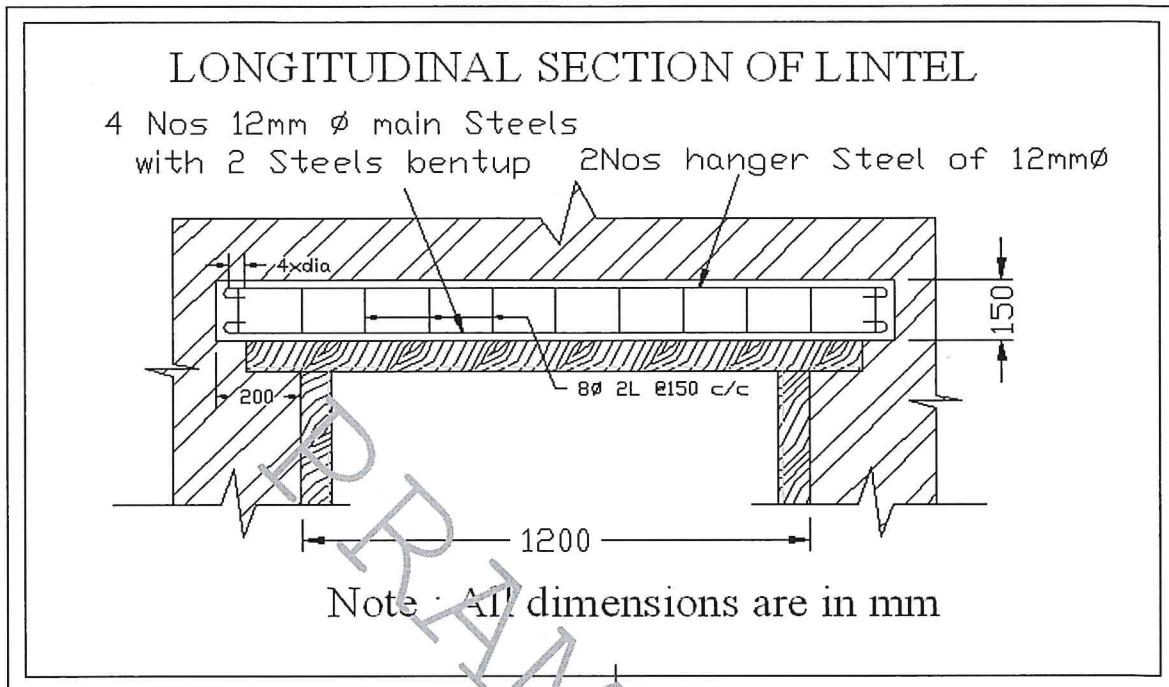
- The other name of sunshade is called CHAJJA
- Component of building which is placed over the opening to prevent adverse effect of weather on a room.
- The purpose of chajja or sun shade is to prevent direct entry of sun light into the room to a certain extent.
- Also, it acts as a barrier to direct entry of rain water into the room through the opening.
- It also adds on to the aesthetic view of a building.
- Usually it is provided at a height of around 7 feet from the floor level.
- If it is made of concrete, it is casted along with lintel monolithically.
- An equal bearing of 9inch – 1 feet has to be provided on both the side of the opening.
- It can be either cast-in-situ or precast
- Reinforcement for chajja is provided in both the directions.
- Thickness of minimum 50mm is a must for chajja.
- Length of the R.C.C chajja shall be equal to lintel.
- Top surface of the chajja shall compulsorily provide water proof coat.
- At the junction of wall and chajja, a curved shape slope shall be provided.

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. A lintel has been an element of in building construction. Many different building materials have been used for lintels. A lintel is defined as a structural horizontal block, such as beam or a stone , that spans the space or opening , as between the upright of two vertical supports.

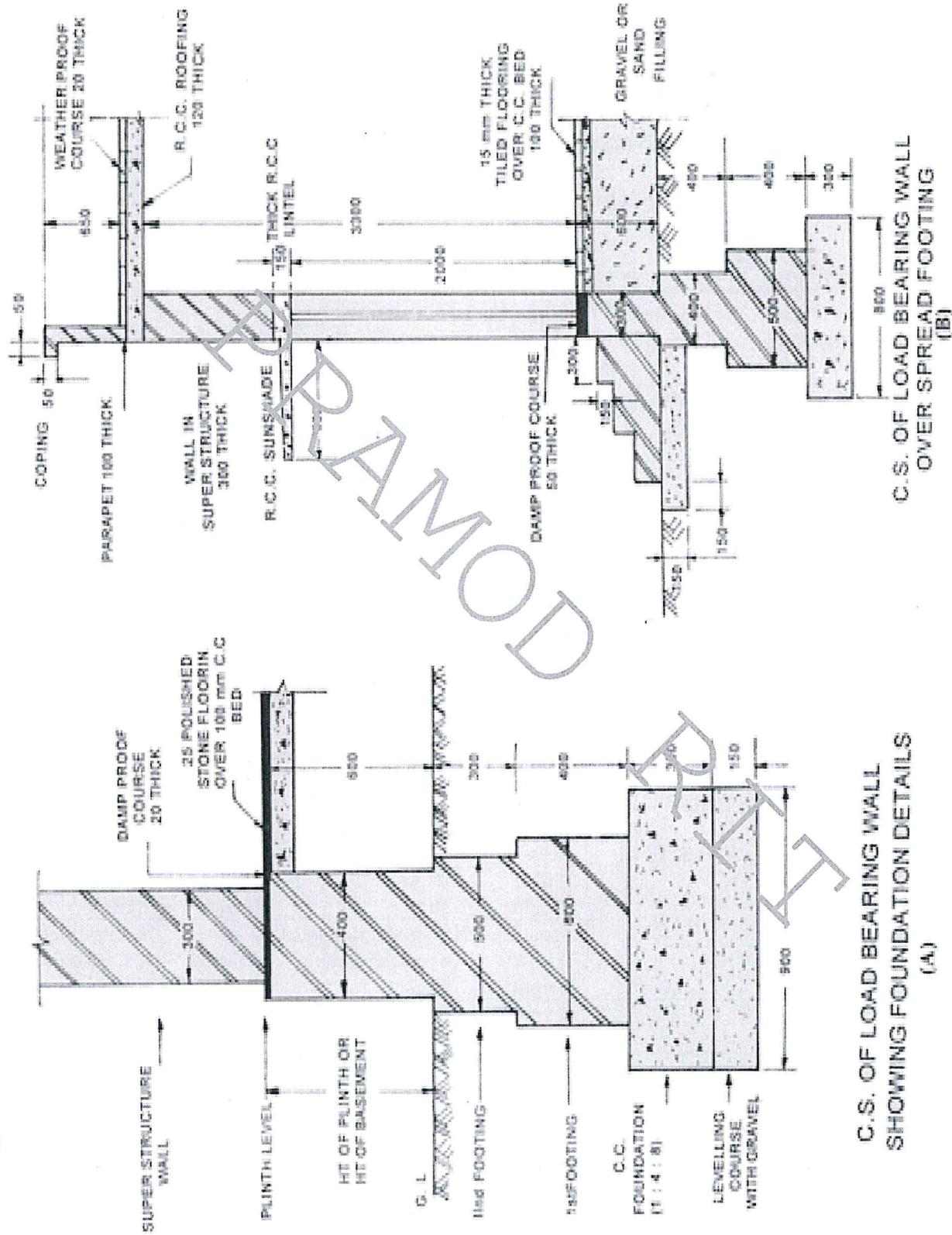
## Sun Shade (Chajja)



## Lintel



### Cross Section of Load Bearing Wall



C.S. OF LOAD BEARING WALL  
SHOWING FOUNDATION DETAILS  
(A)

C.S. OF LOAD BEARING WALL  
OVER SPREAD FOOTING  
(B)

## SPACE REQUIREMENT FOR DIFFERENT PARTS OF BUILDING

### Main Building

The plinth or any part of a building or outhouse shall be so located with respect to average road level from site so that adequate drainage of the site is assured but at a not height less than 45 cm.

### Interior Courtyards, Covered Parking Spaces and Garages

These shall be raised at least 15 cm. above the surrounding ground level and shall satisfactorily drained.

### Habitable Rooms Size and Width

The minimum size and width shall be as given in Table below:

### ~~Minimum Size and Width of Different Components of Residential Premises~~

Sl. No.	Component of Building	Min. requirement for plots upto 50 Sqmts	Min. requirement for plots above 50 Sqmts
1	Habitable Room	Area 7.50 Sq. m. Width 2.10 m Height 2.75 m	Area 9.50 Sq. m. Width 2.40 m Height 2.75 m
2	Kitchen	Area 2.30 Sq. m. Width 1.50 m Height 2.75 m	Area 4.50 Sq. m. Width 1.50 m Height 2.75 m
3	Pantry	Area No Applicable Width No Applicable Height No Applicable	Area 3.00 Sq. m. Width 1.40 m Height 2.75 m
4	Bath Room	Area 1.20 Sq. m. Width 1.00 m Height 2.20 m	Area 1.80 Sq. m. Width 1.20 m Height 2.20 m
5	W.C.	Area 1.00 Sq. m. Width 0.90 m Height 2.20 m	Area 1.10 Sq. m. Width 0.90 m Height 2.20 m
6	Combined Bath and W.C. (Toilet)	Area 1.80 Sq. m. Width 1.00 m Height 2.20 m	Area 2.80 Sq. m. Width 1.20 m Height 2.20 m
7	Store	Area No. restrictions Width No. restrictions Height 2.20 m	Area No. restrictions Width No. restrictions Height 2.20 m
8	Projection	Permitted within the setback upto 0.75 m. width	Permitted within the setback upto 0.75 m. width
9	Canopy	Permitted within the setback upto 1.00 m. width	Permitted within the setback upto 1.50 m. width
10	Garage	----- ----- -----	Area 14.85 Sq. m. Width 2.75 m Length 5.40 m Height 2.40 m
11	Passage	-----	Width 1.00 m

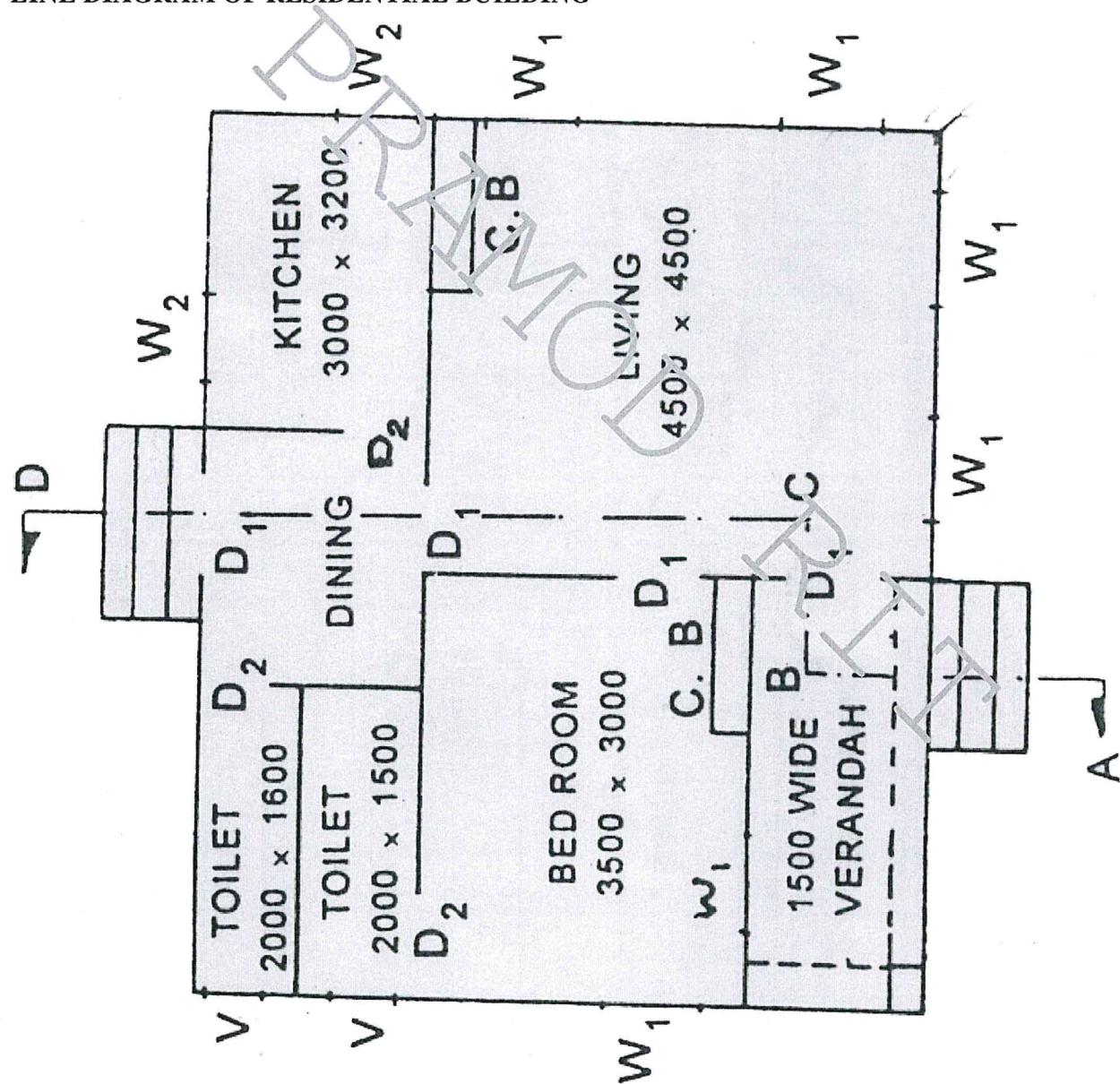
Remember that elevations are a visual representation, so you can make them as detailed as needed. You can go a step further and add colors in a program like Photoshop (for an example, click [here](#)). Later on if you start drawing 3D, you can create rendered images that look almost photographic, but for 2D work, elevation drawings do a great job.

Learn how elevations work, and be careful about what objects appear in front of others. There are not a lot of commands that are needed when creating elevations, but you need to learn how to use them wisely, and be fully aware of what you are drawing.

**Extra practice:** Copy the floor plan to the left, then rotate it 90 degrees counter-clockwise. Draw your projection lines down, then draw lines over from your existing elevation to get the heights. Finish this and the other 2 sides.

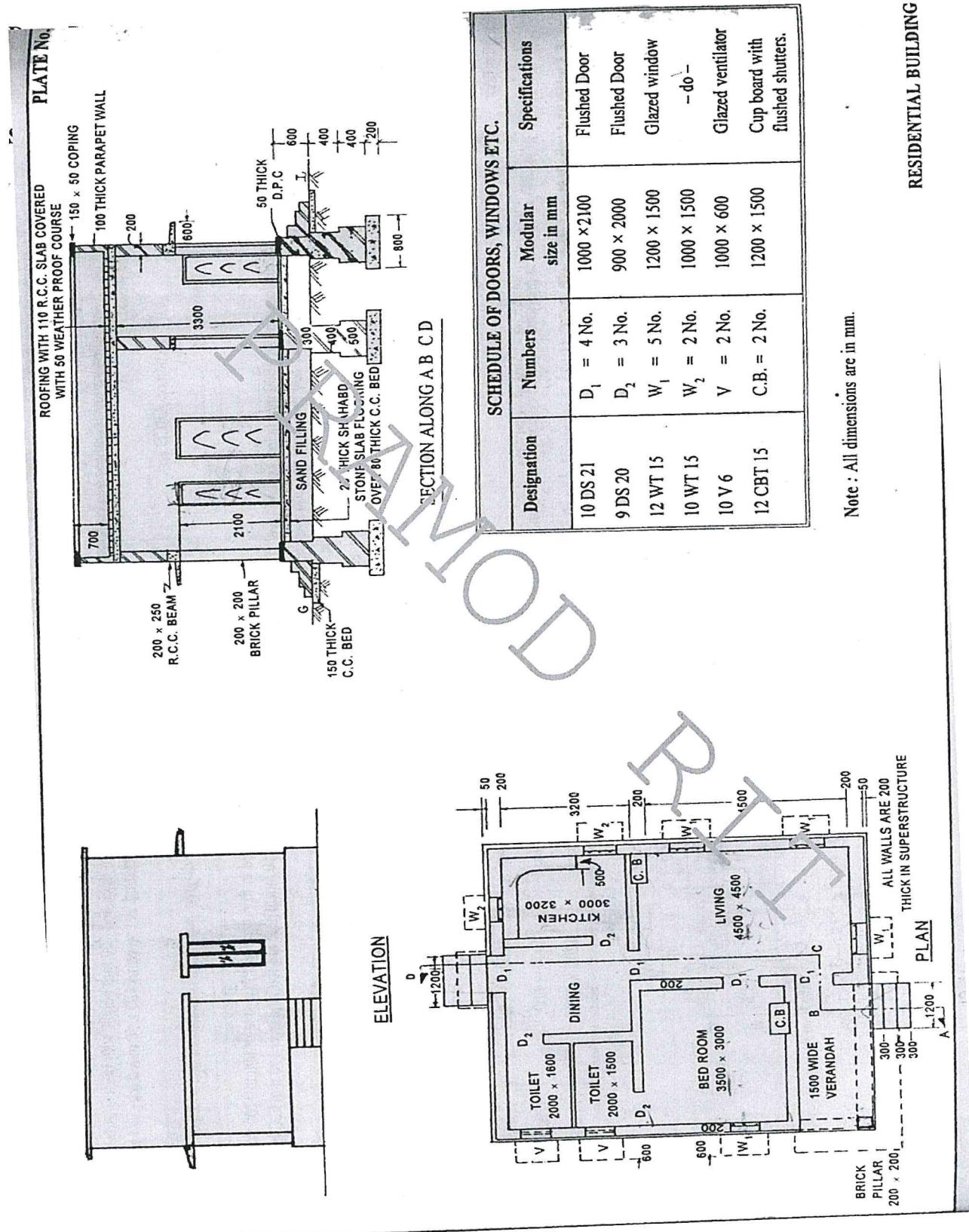
**Extra practice:** Draw some interior elevation from this floor plan. Add outlets, lights and other details.

#### LINE DIAGRAM OF RESIDENTIAL BUILDING



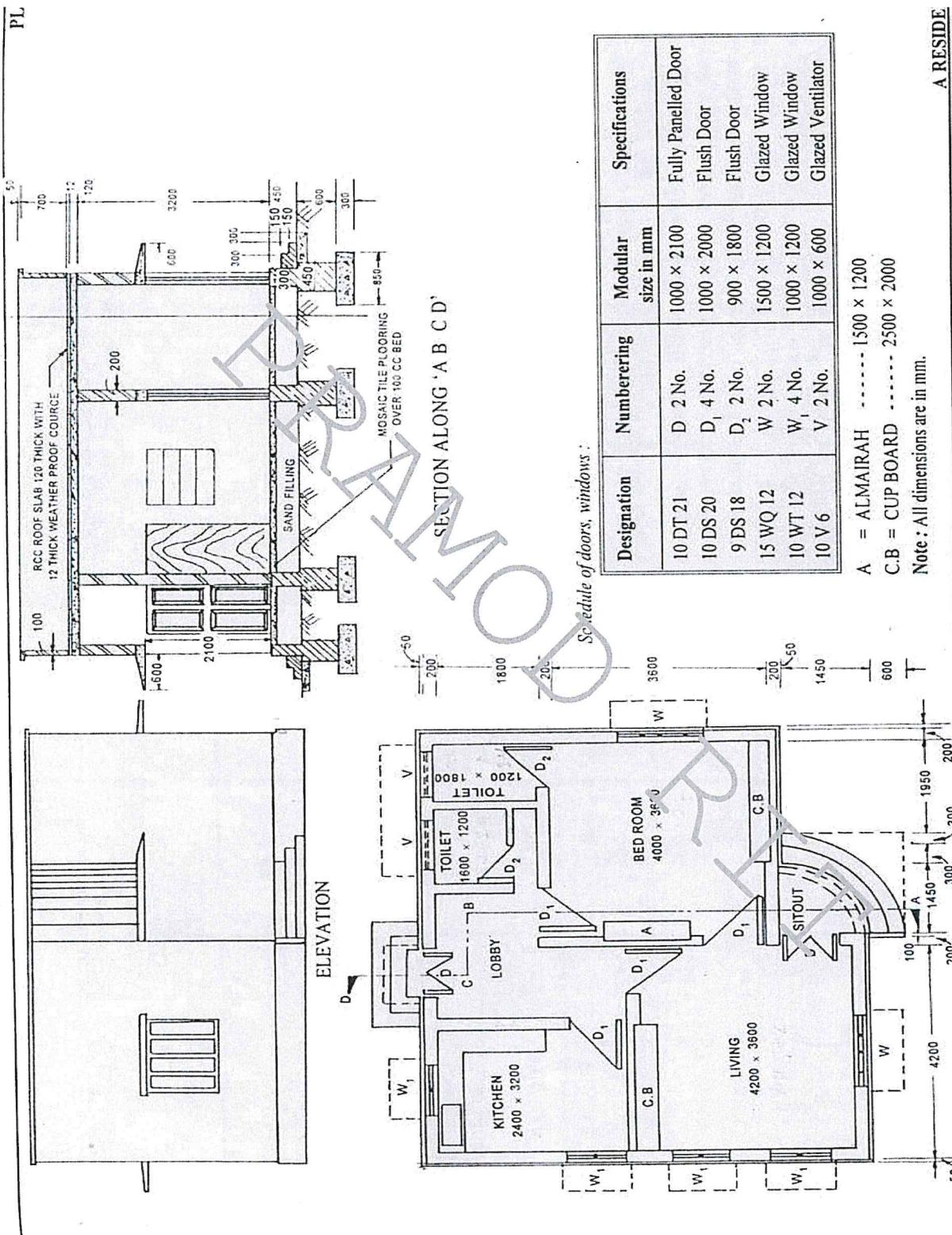
## RESIDENTIAL BUILDING

Draw Plan, Elevation and Section of the Residential Building as shown



## **RESIDENTIAL BUILDING**

## **Draw Plan, Elevation and Section of the Residential Building as shown**



## SINGLE BEDROOM HOUSE

SCHEDULE OF DOORS, WINDOWS, VENTILATORS AND CUP BOARDS.

Designation	Numbering	Modular size in mm	Specifications
10 DT 21	D = 2 No	1000 x 2100	Fully panelled
10 DS 21	D <sub>1</sub> = 2 No	1000 x 2100	Flushed door
9 DS 18	D <sub>2</sub> = 3 No	900 x 1800	Flushed door
15 WQ 12	W <sub>1</sub> = 1 No	1500 x 1200	Glazed window
10 WT 12	W <sub>2</sub> = 7 No	1000 x 1200	Glazed window
15 CBT 18	C.B = 2 No	1500 x 1800	Flushed shutters
10 V 6	V = 3 No	1000 x 600	Glazed ventilator.

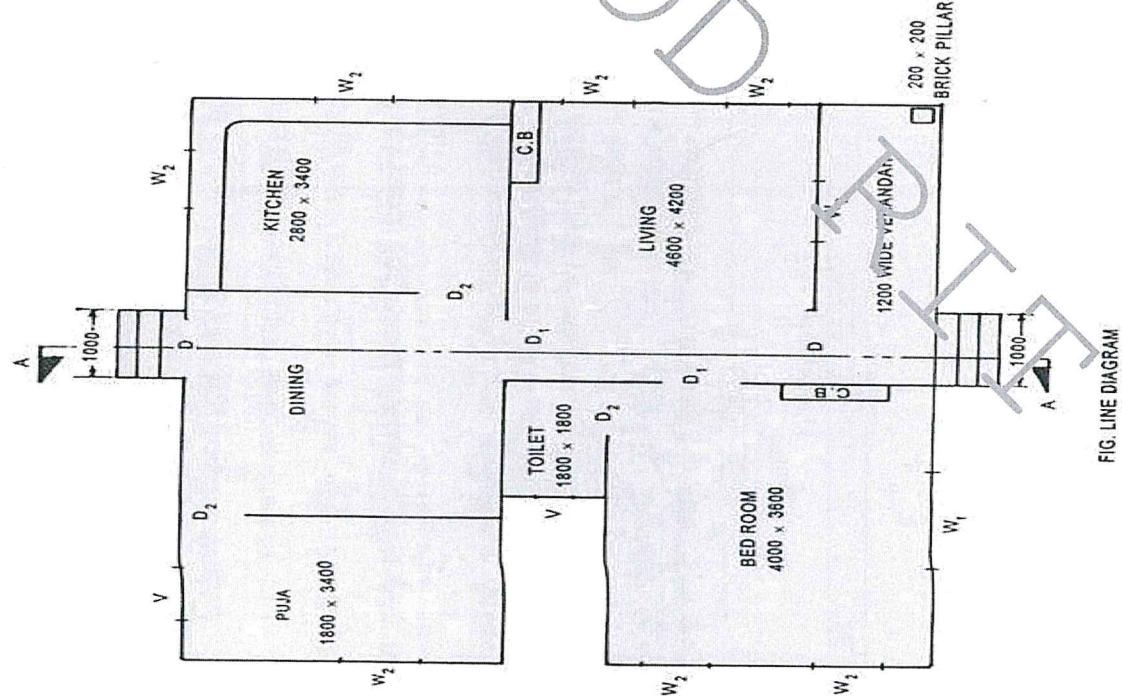
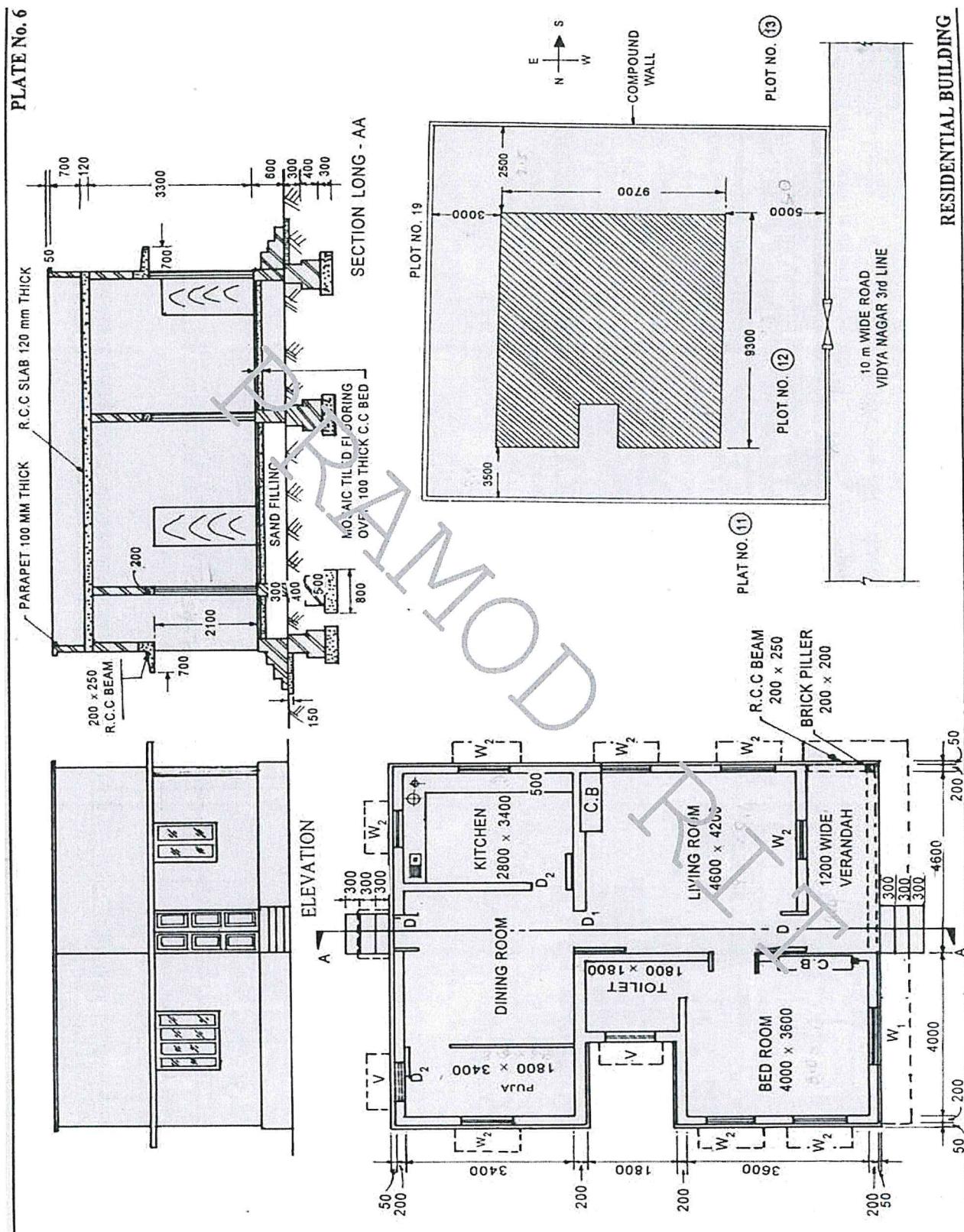


FIG. LINE DIAGRAM

Draw Plan, Elevation and Section of the Residential Building as shown

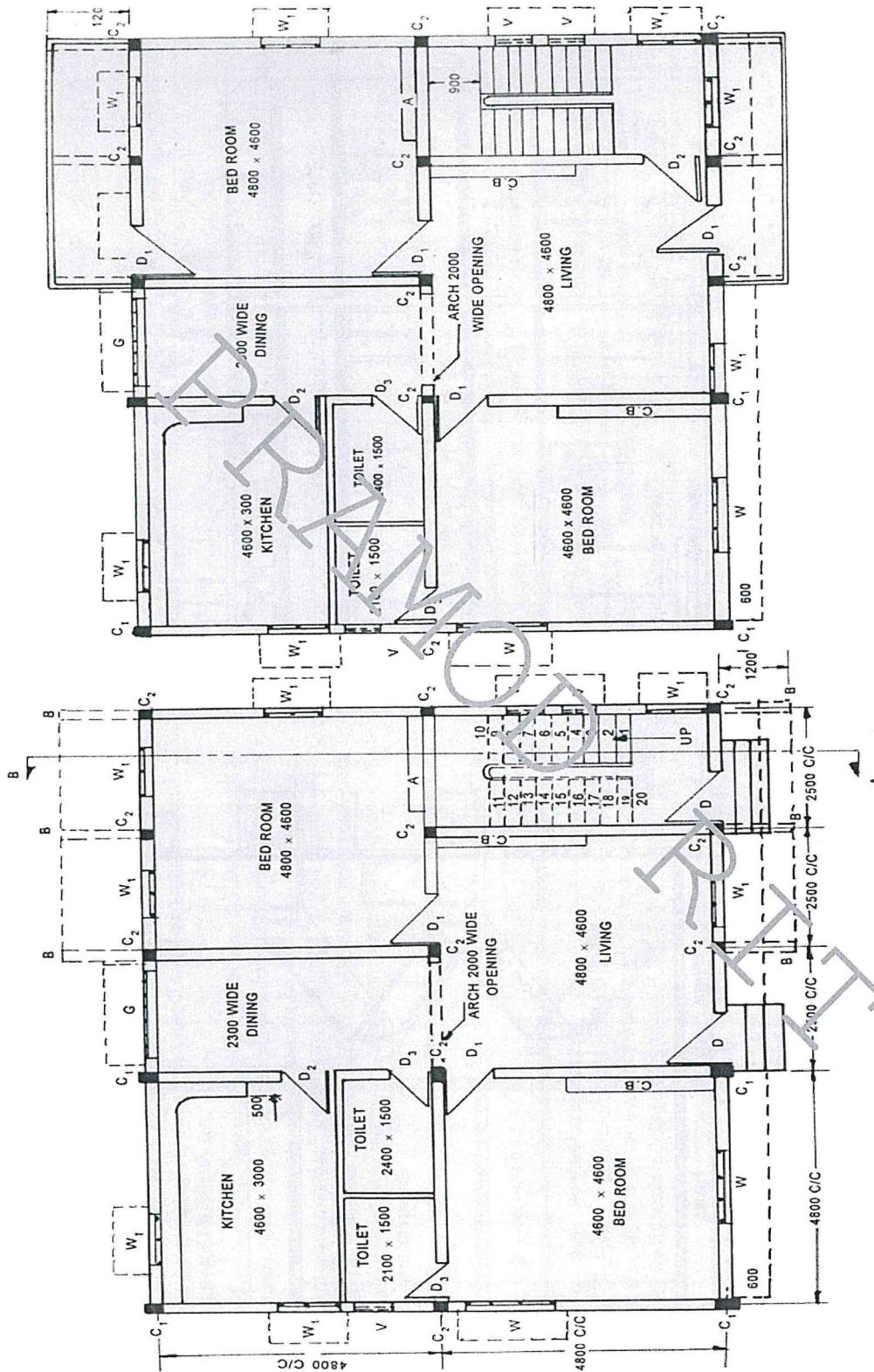


### PRACTICAL 13

**Draw Plan of the Two Storied Building as shown**

TWO STOREYED FRAMED STRUCTURE

PLATE No. 11



GROUND FLOOR PLAN

FIRST FLOOR PLAN

## **ELEVATION AND SECTION TWO STOREYED BUILDING**

