

# WINDOWS

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# WINDOWS

- Windows are openings provided in the wall above floor level for light and air.
- Top of the doors and top of windows should remain at one level.
- Consists of two parts:
  - Window Frame
  - Window Shutter

# WINDOW FRAME

- It consists of
  - Two vertical members called posts
  - Two horizontal members connecting the posts at top and bottom called head and sill respectively.
- To safeguard against entry of outsiders into the building through the windows, cross bars or steel grill or fixed to the frame.
- Window frame is fixed to the wall by holdfasts.
- Back of the frame which comes in contact with wall should be given a coat of coal tar to protect against moisture and insects.





# WINDOW SHUTTER

- Number of shutters are provided on the basis of size of window.
- If number of window shutters are more than two, intermediate vertical posts called mullions are provided.





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# LOCATION OF WINDOWS

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- Windows are provided for admittance of light and air.
- Position depends on orientation of room.
  - Window in a bedroom should allow passage for breeze.
  - Window in drawing room, dining rooms, kitchen etc should provide enough light and ventilation.
- Maximum area of windows must be provided on the walls facing the prevailing wind direction.
- Sill should be 60-80 cm above floor level. For windows/ventilators in toilets and store rooms, sill height can be kept at 1.5 m or 0.80 m for glazed windows.
- Level of heads of doors and windows should be at same level.



# LOCATION OF WINDOWS

- Number of windows in cold climates should be minimum.
- In hot and humid climates windows are located such that they prevent uncomfortable indoor conditions.
- Proper shading devices can be provided like sunshades to prevent entry of rainfall and unwanted sun rays but to allow cool breeze.
- Shutters should open on outer side.
- Steel grills or cross bars must be provided to prevent burglary.



# LOCATION OF WINDOWS

- Location should be such that they improve the external appearance of building.
- Windows in kitchen, toilet should be provided with fly proof mesh.,
- To avoid sun glare, solar radiation control films can be provided.
- Films are also provided to make glass shatter proof
- Venetian blinds can be used for light, wind and privacy.



P Dark Reflective Film







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# SIZES OF WINDOWS

# STANDARD SIZES OF WINDOWS

- Size depends on requirement of light, ventilation and architectural appearance.
- Area of windows should not be less than
  - ▣ 10% of floor area: for residential buildings.
  - ▣ 20% of floor area: for offices, schools, factories etc.
- As per IS: 435-1967, IS:4021-1967, IS: 2119 – 1966, width and height of modules by number of modules when each module is 10 cm. Size of window is mentioned by allowing 3 mm clearance on all sides for fixing frame in the opening.

## Common sizes of windows:

1 m x 1.4 m
1.5 m x 1.4 m
2 m x 1.4 m
2.5 m x 1.4 m
3 m x 1.4 m
1 m x 0.5 m
0.5 m x 1.4 m

For Bed rooms, drawing room, kitchen, dining rooms etc.

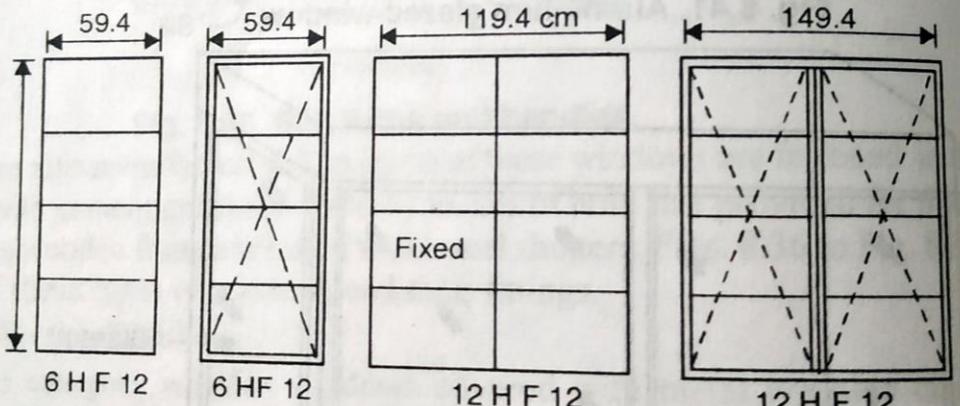
For toilets, store rooms, garages etc.

# SIZES OF WINDOWS

an institution.

## Designation

	<i>Size of frame</i>
6 HF 12	59.4 × 119.4 cm
10 HF 12	99.4 × 119.4 cm
12 HF 12	119.4 × 119.4 cm
15 HF 12	149.4 × 119.4 cm
18 HF 12	179.4 × 119.4 cm
6 HF 15	59.4 × 149.4 cm
10 HF 15	99.4 × 149.4 cm
12 HF 15	119.4 × 149.4 cm
15 HF 15	149.4 × 149.4 cm
18 HF 15	179.4 × 149.4 cm



## *Size of opening*

60 × 120 cm
100 × 120 cm
120 × 120 cm
150 × 120 cm
180 × 120 cm
60 × 150 cm
100 × 150 cm
120 × 150 cm
150 × 150 cm
180 × 150 cm

□ 6HF 12

Width of opening in modules, each module = 10 cm

Horizontal glazing

F: Fixed glazing  
S indicates side hung window

Height of opening in modules, each module = 10 cm

□ 10 HS 15

## FIXED WINDOW



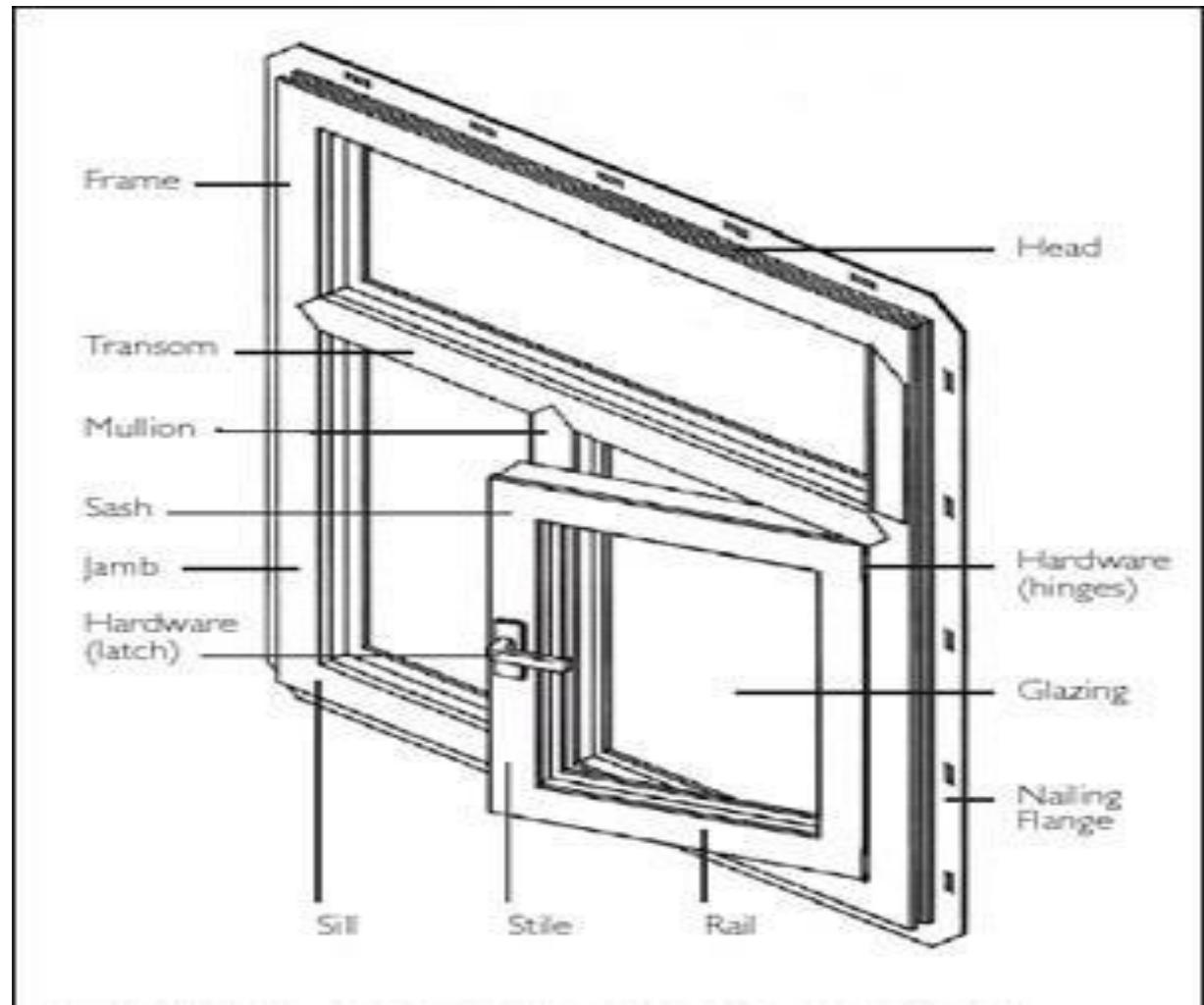
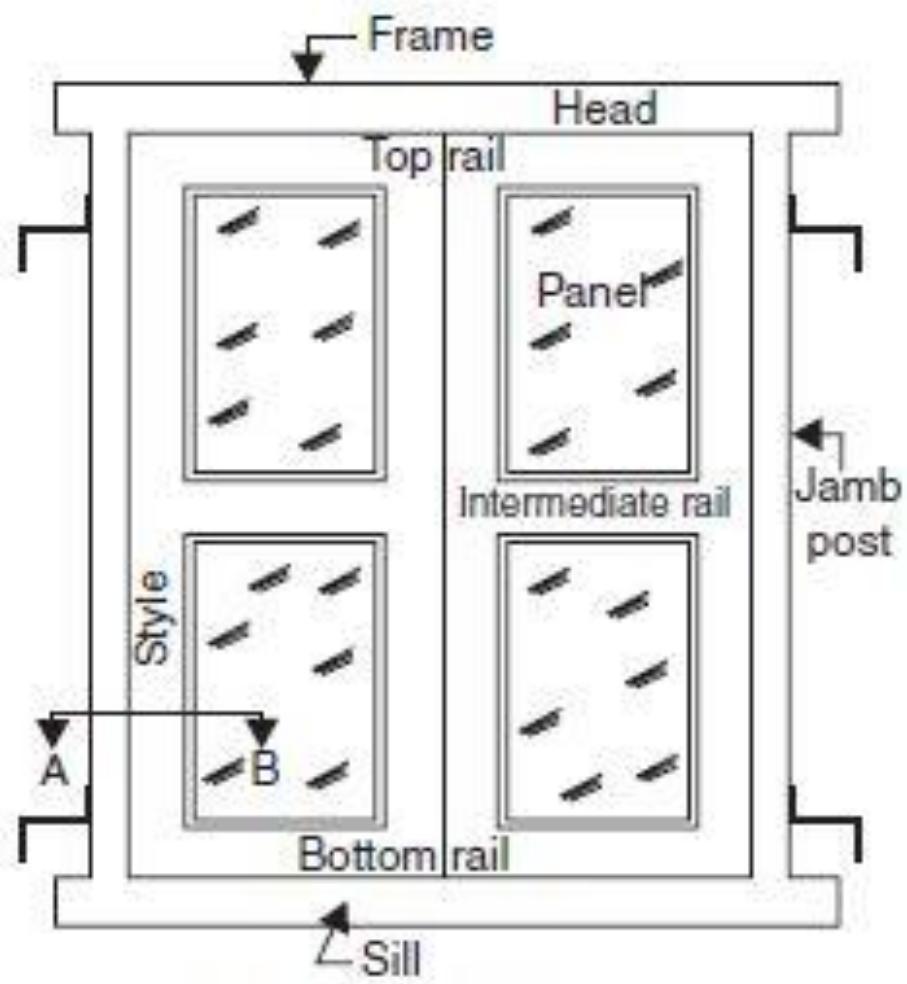
## SIDE HUNG WINDOW





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# TECHNICAL TERMS OF WINDOWS





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# TYPES OF WINDOWS

# WOODEN WINDOWS



Casement  
Window



Pivoted  
Window



Bay Window



Dormer  
Window

# WOODEN WINDOWS



Clere Storey  
Window



Double Hung  
Window



Louvered  
Window



Sliding  
Window

# STEEL WINDOWS



Solid Section Window

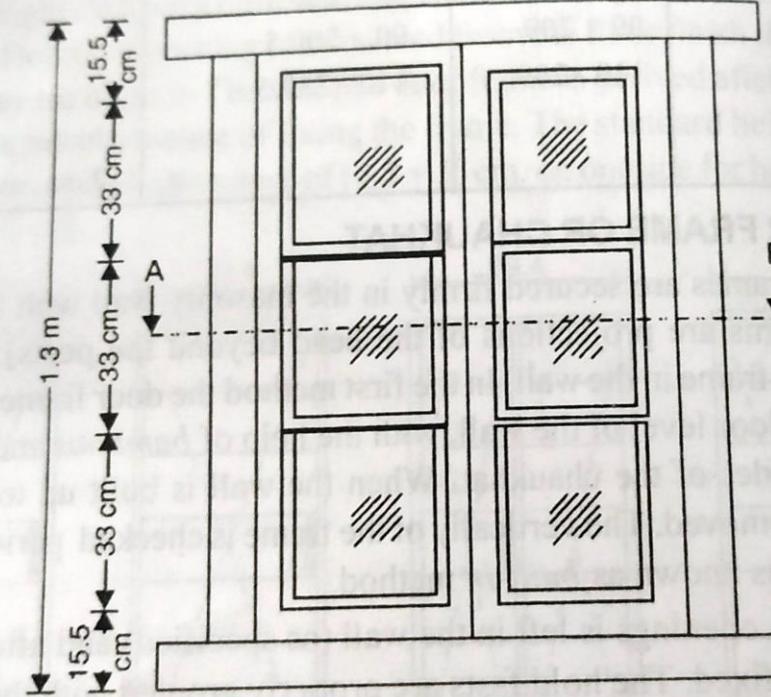


Hollow Section Window

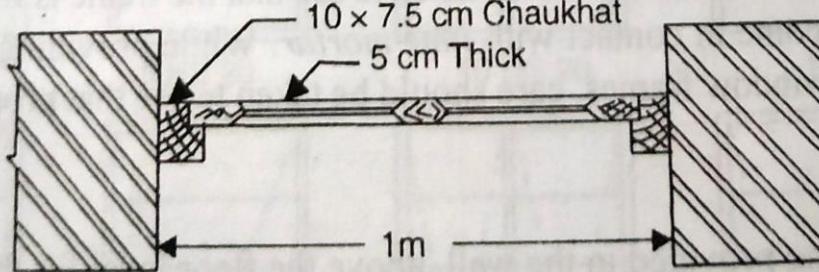
# CASEMENT WINDOW

- Ordinary window used in residential and public buildings.
- It consists of a chaukhat and two or more shutters.
- Glazed windows.
- In some cases, window is divided into several panels by fixing vertical posts and glazing in one of the panels may be fixed and others may be openable.
- Sash bars are also provided.





Elevation

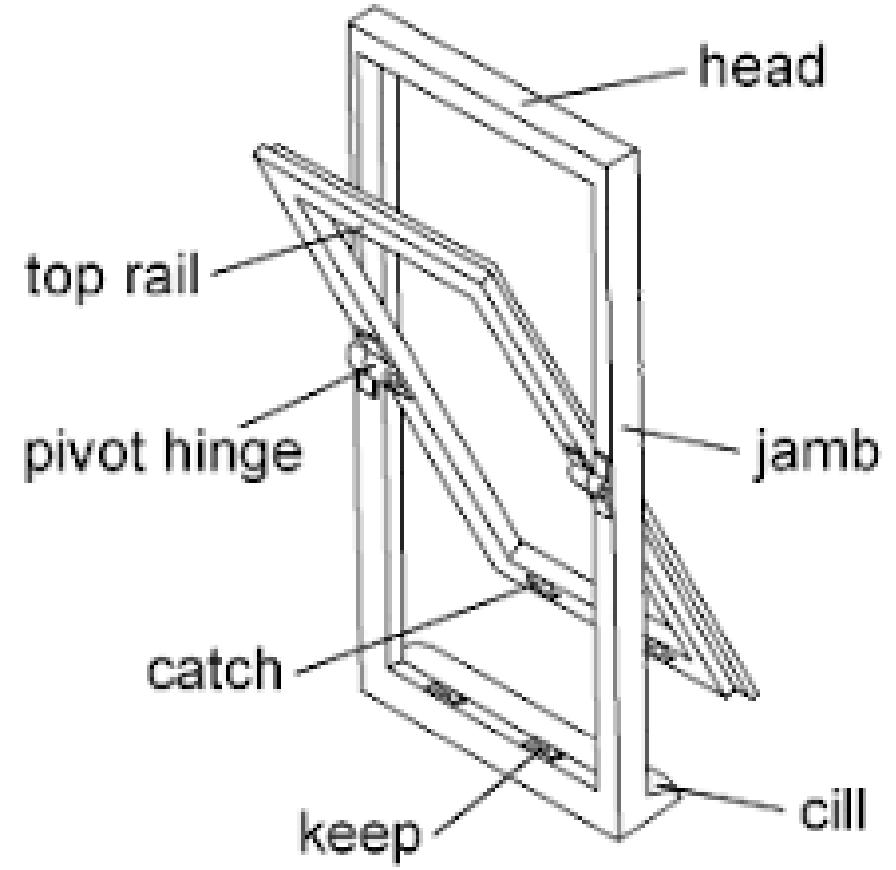
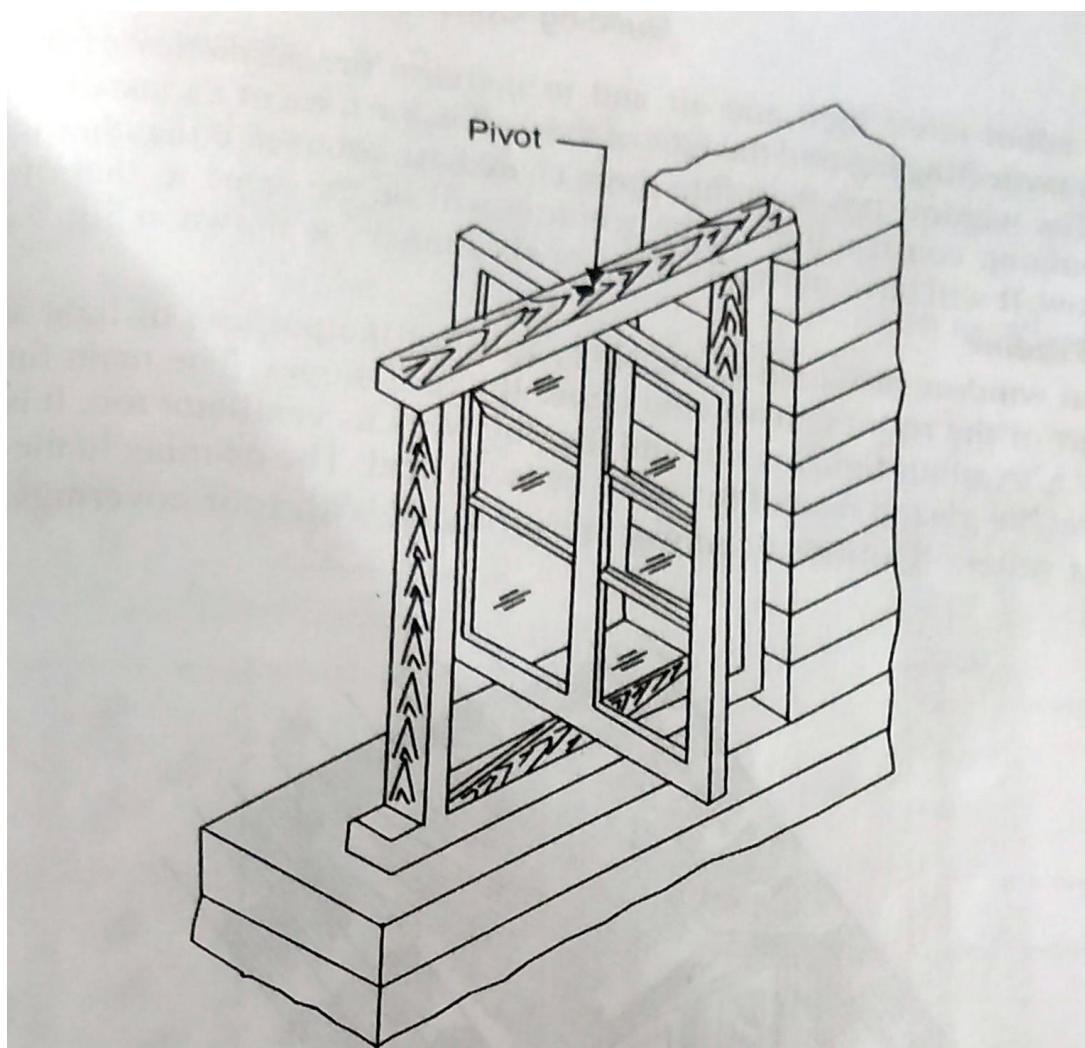


Sectional plan at 'AB'

# PIVOTED WINDOW

- Shutters are not hinged but pivoted at top and bottom or pivoted horizontally on sides, in the centre of the frame such that shutter is hung diagonally in the frame.
- Suitable in hospitals, hostels, offices, residential buildings too.

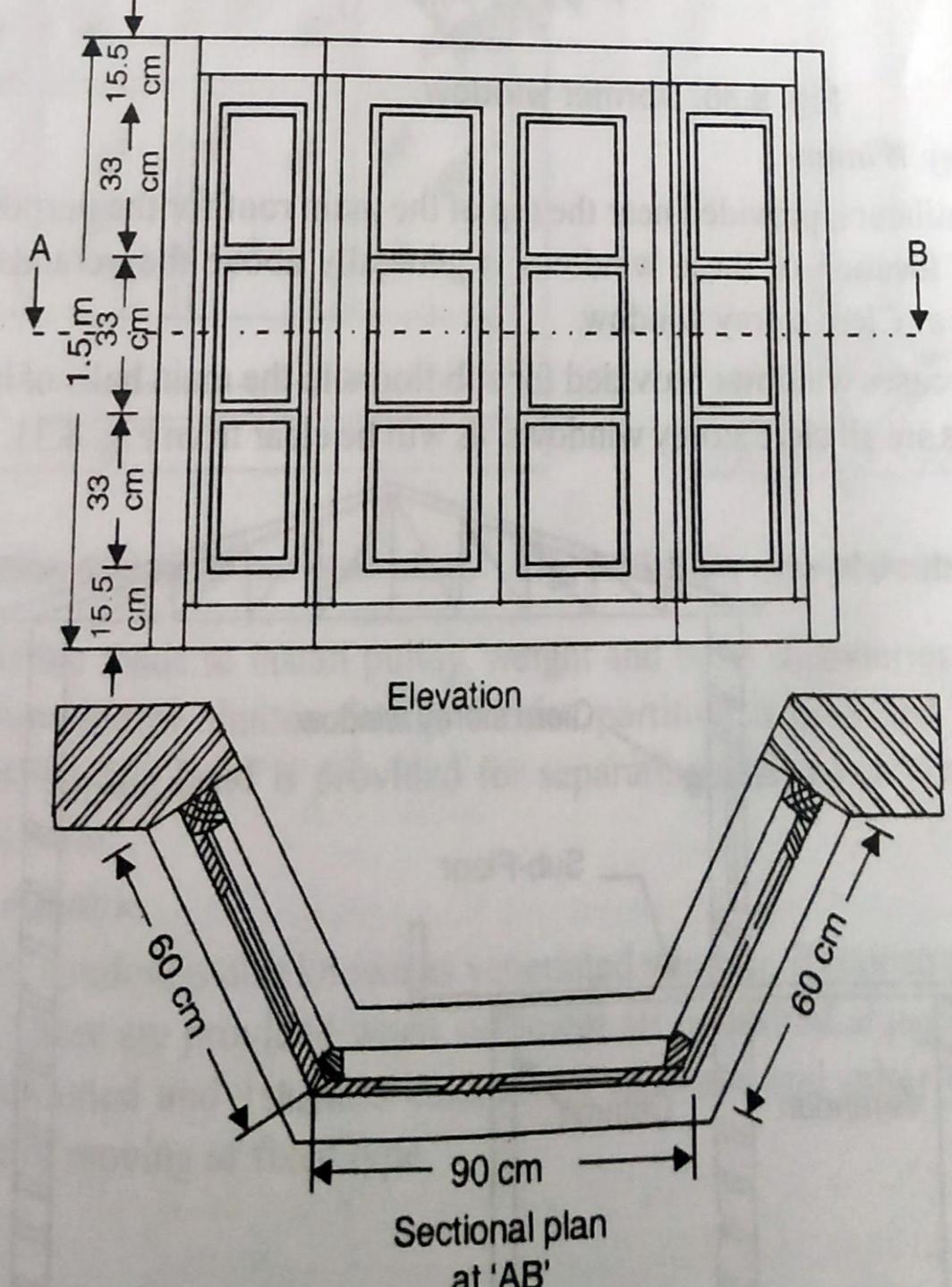




# BAY WINDOW

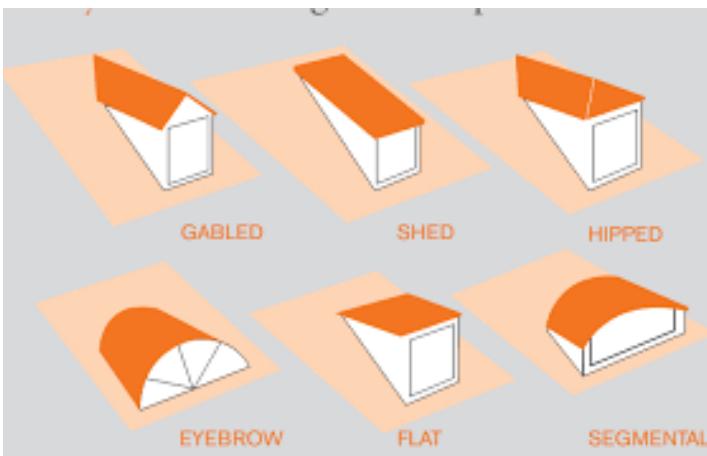
- Window projected beyond the face of wall
- Provided to admit more light and air and to increase the aesthetics of a room.
- Windows can project beyond the wall in the form of square or polygon.
- Window has three chaukhats connected together with common posts.
- 3-6 shutters.

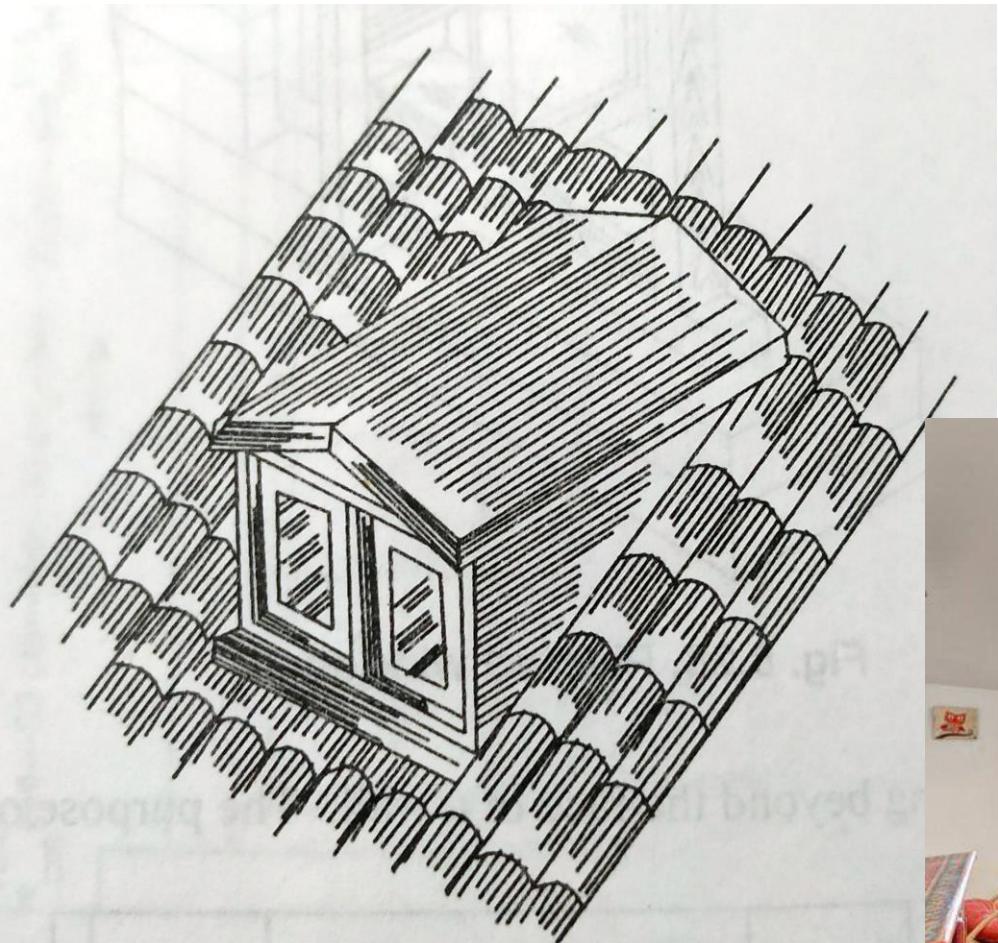




# DORMER WINDOW

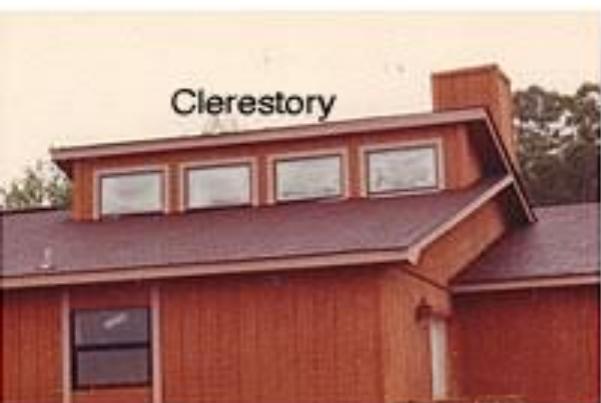
- Vertical window provided in slopy roof for light and air in the room.
- Work as a ventilator too
- Dormer windows are provided with roof coverings

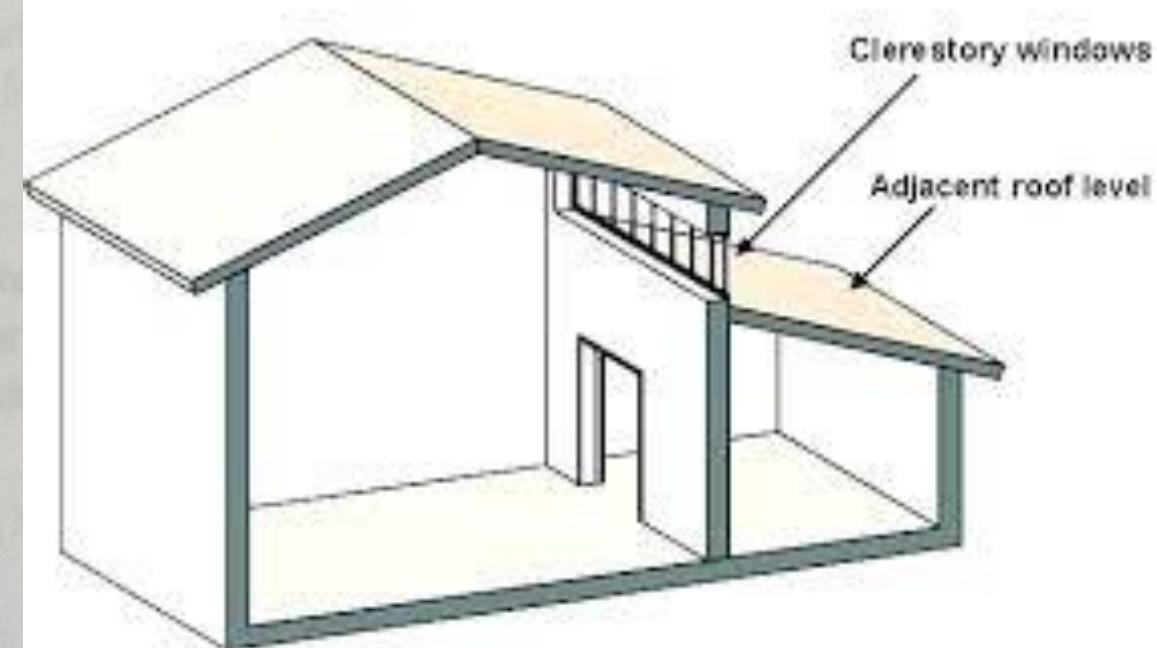
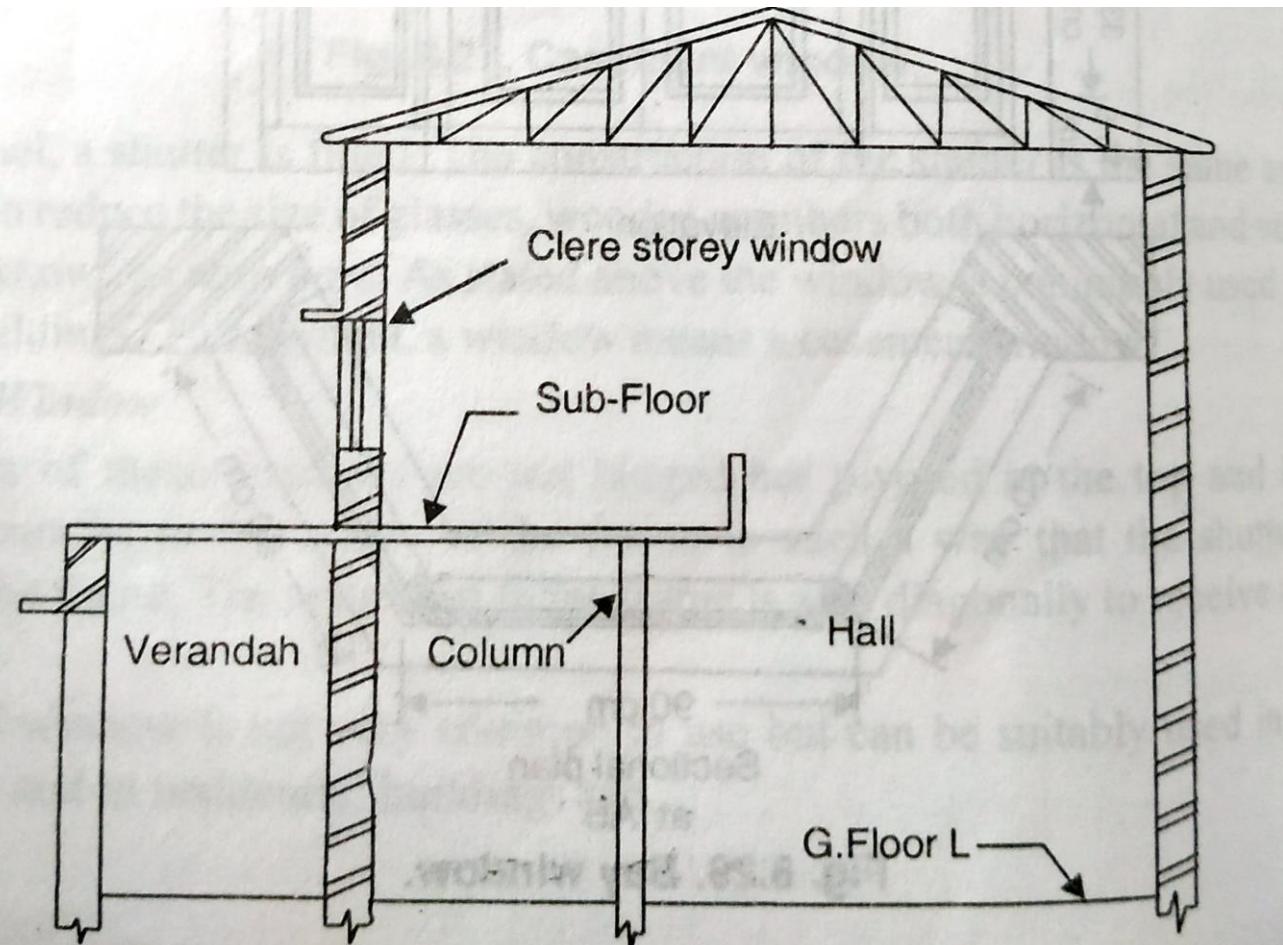




# CLERE STOREY WINDOW

- Windows provided near top of the main roof for the purpose of light and ventilation.
- Located generally above the verandah roof.
- Provided in dancing halls, libraries, halls of hotels





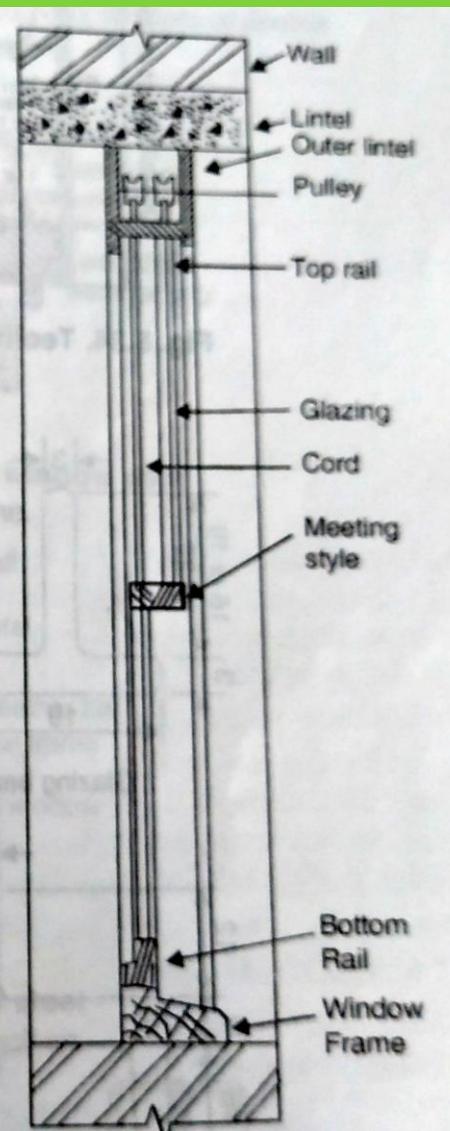
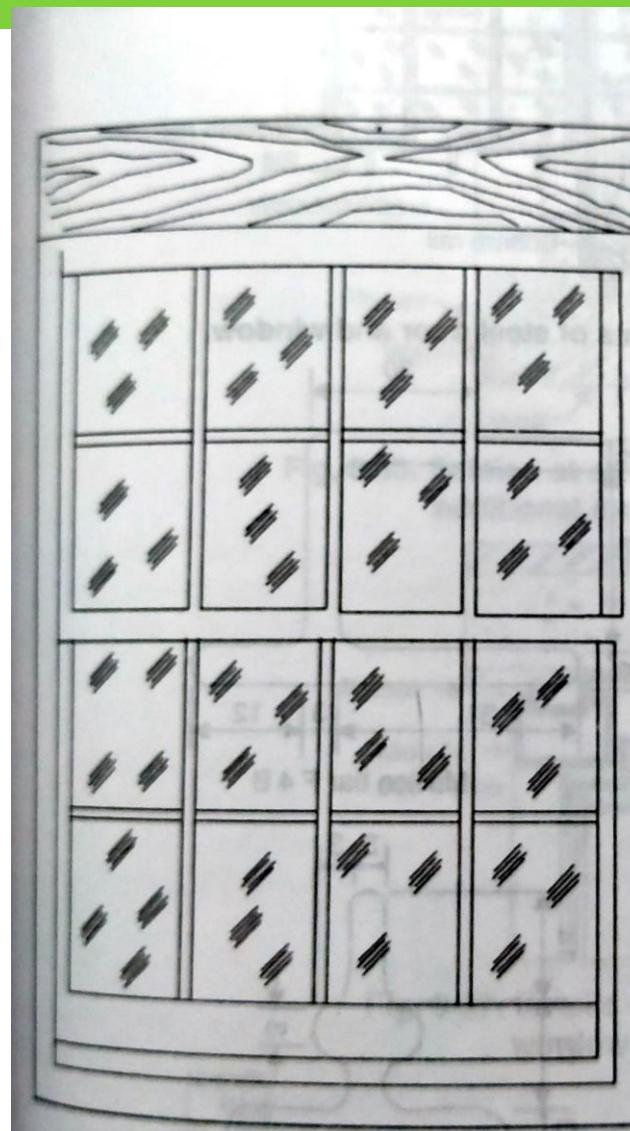
# DOUBLE HUNG WINDOW

- It consists of two shutters which move vertically upward or downwards by means of cords passing over pulleys and are connected by counterweights at other ends.
- Vertical movement of shutters.
- Window frame consists of two vertical members, one had and sill.



Two movable sashes (panels)

Two movable sashes (panels)



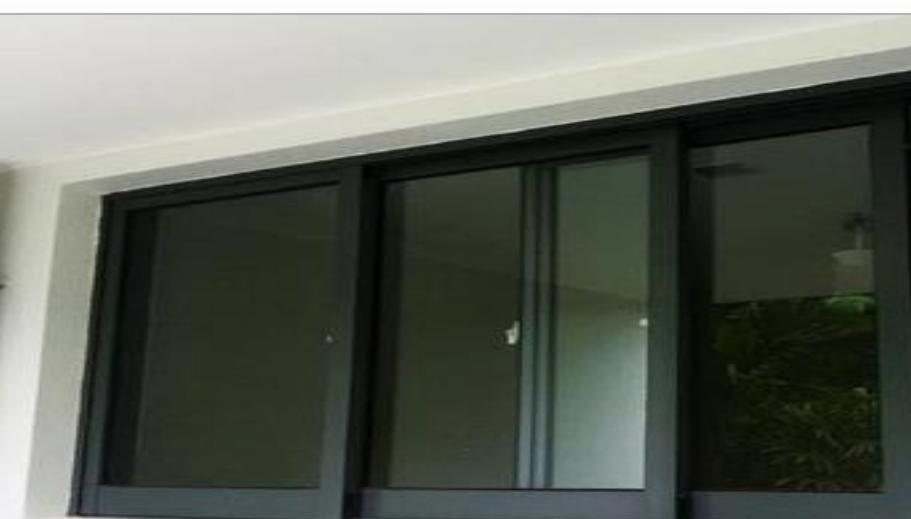
# LOUVERED/VENETIATED WINDOW

- Provided air as well as privacy when closed.
- Louvers can be movable or fixed.



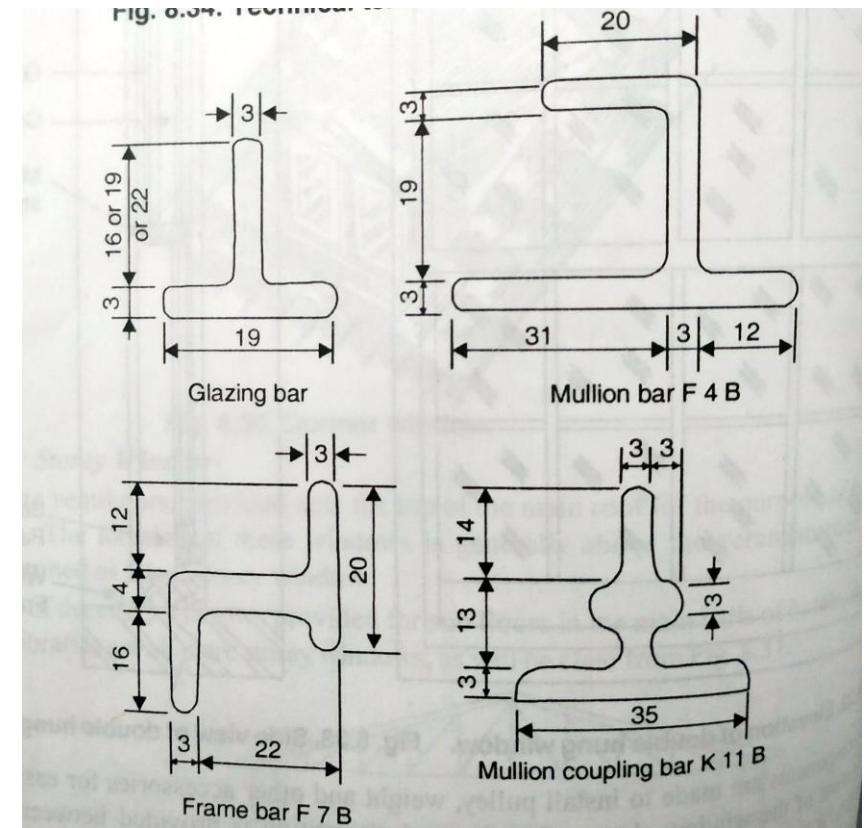
# SLIDING WINDOW

- Shutters can move horizontally on small roller ball bearings fixed at bottom of shutters.



# SOLID STEEL SECTION WINDOW

- As per IS 1038-1968.
- Window shutters can be hinged at bottom, top, side or pivoted to move in horizontal or vertical direction.
- Frames of these windows are fastened in the masonry in a groove with cement grout and fixed by holdfasts
- Sometimes wooden frames are also used to fix steel shutters.



# HOLLOW STEEL SECTION WINDOW

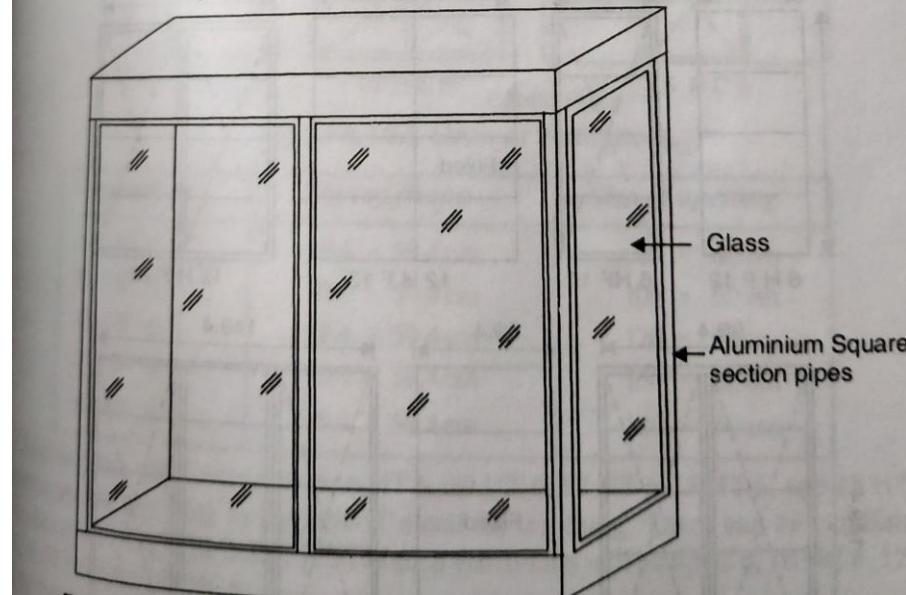
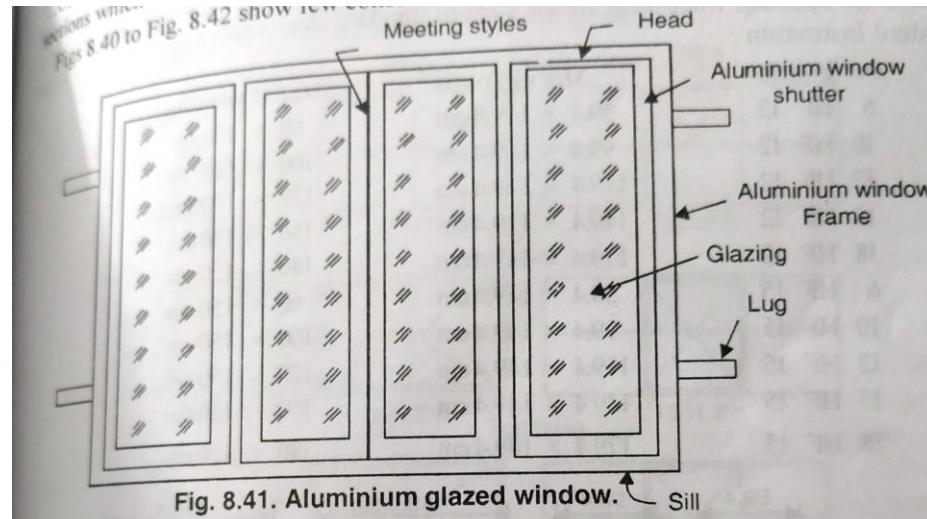
- They consists of metal sheets of blue annealed steel, galvanized steel coated over wooden windows or provided as such.
- Double hung or casement type



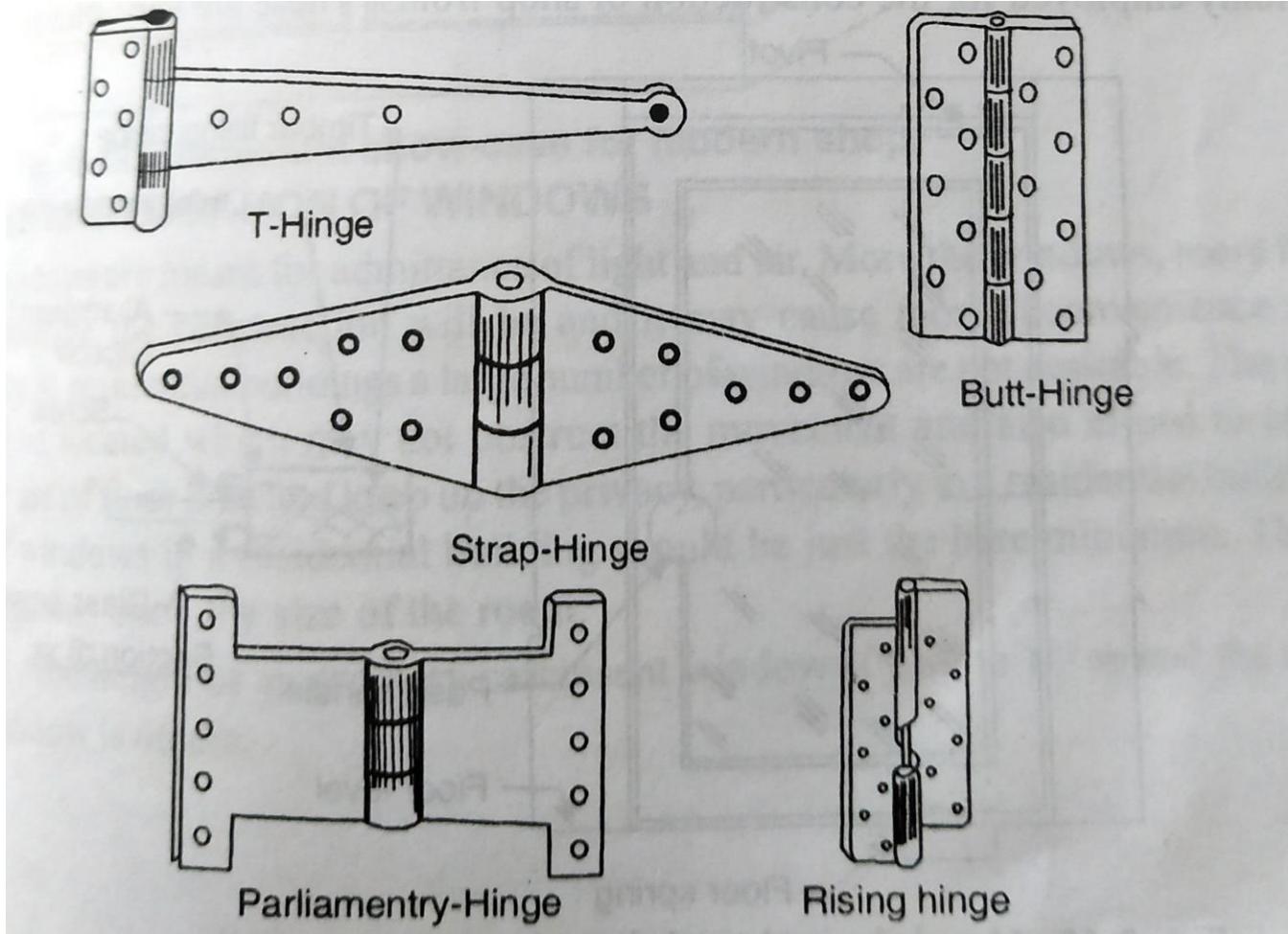
# ALUMINIUM WINDOW

- Used mostly in shop show cases or entrances.
- Attractive, require no maintenance, free from atmosphere actions
- Constructed with U, T, O and flat sections.
- Timber rods are filled in aluminum pipes





# HINGES IN WINDOWS



# BOLTS, LOCKS AND HANDLES IN WINDOWS

