

INTERIOR DESIGN STUDIO AND BUILDING SYSTEM TECHNOLOGY 1

SUBJECT CODE: CAID32

UNIT - III

Details of Doors - Hinged, Sliding, Swing, Panelled, Louvered, Glazed, Revolving, Flush, wire gauged and Collapsible; Windows - Casement, Double hung, Pivoted, Sliding, Glazed, Bay, Corner, Clerestory, Dormer, Gable and Skylights; Lintels and Arches - Key terms - Voussoirs, Intrados, Extrados, Span, Crown, Rise, Keystone and Abutment, Types - Flat, Segmental, Semi-circular, Horse shoe, Pointed, Venetian, Florentine, Relieving, Stilted and Semi elliptical; Partitions - timber, R.C.C and Metal.

INTRODUCTION

To provide access into a building, to facilitate movement of people between its rooms, and to allow ventilation and entry of light openings are provided in walls such as, doors and windows with or without its ventilators. Doors and windows, can be closed whenever required, for reasons of privacy and security. Windows and ventilators admit light and air into the rooms providing a healthful environment; windows are also a means to provide the occupants of the building with a view of the outside surroundings. Windows are provided with shutters which can be glazed, panelled or venetianed so that they can be closed to the required extent, and secured as and when needed. Ventilators and small windows provided near the ceiling, basically for the purposes of ventilation.

DETAILS OF DOORS

A door is a movable structure used to provide access to connect accessible areas, typically consisting of a panel that swings on hinges or that slides or rotates inside of a space A door can be defined as an operable barrier secured in a wall opening. Door design and types differs with type of building and style, purpose of enclosure, location, material, transparency, and cost. Doors are built-in with door hinges, stoppers; security- bolts, latches, safety bolt, locks, peep holes, knocker, view glass, burglar precautions chain, key hole, knobs and handles, house number plate and finger plates to increase its function and utility. Doors are designed elaborately and ornamented in traditional and cultural buildings and are often symbolically endowed with cultural values.

FUNCTIONS OF DOOR

1. Doors serve as a connecting link between the various exterior and interior portions of a building

2. Doors when open, admit ventilation and light, facilitate views and act as a barrier to noise
3. Doors have an aesthetic role in creating an impression to the viewers.
4. Doors are also used to control flow of traffic.
5. Doors control climate, provide light and ventilation, sounds, smells, breezes, warmth and cold to travel in and out of home and between rooms and expand visibility
6. Doors are generally used to separate interior spaces (rooms, closets, etc.) for privacy, convenience, security, and safety reasons.
7. Doors influence furniture arrangement, add decoration, emphasize the overall design of building.

Location of door

1. The number of doors in a room should be kept minimum since larger number of doors cause obstruction, and consume more area in circulation.
2. The location of a door should meet functional requirements of a room. It should not be located in the centre of the length of a wall.
3. A door should preferably be located near the corner of a room-nearly 20 cm away from the corner.
4. If there are two doors in a room, the doors should preferably be located in opposite walls, facing each other, so as to provide good ventilation and free-air circulation in the rooms.
5. A number of other factors that influence the location of doors are circulation path, furniture arrangement, view and privacy and also light, heat and cold control.

DOORWAY COMPONENTS

Basically, a door consists of two parts:

1. Door frame, and
2. Door shutter.

The door shutter is held in position by the door frame which in turn is fixed in the opening of the wall by means of hold-fasts etc.

Door Frame

1. The doorway consists of an assembly of horizontal and vertical members, forming an enclosure, to which the shutters are fixed. It has two vertical jambs head jamb at the top, and perhaps a threshold at the bottom.
2. The vertical jambs that form the sides of a door frame, is where the hinges are mounted, and with which the bolt interacts.

3. Lintel - A horizontal beam above a door that supports the wall above it.
4. Sill - A horizontal beam below the door that supports the frame
5. Architrave - The decorative moulding that outlines a door frame

DOOR SHUTTER

1. These are the openable parts of a door. It is an assembly of styles, panels and rails. When a door has more than one movable section, one of the sections may be called a leaf.
2. The attachments to doors are door handles and doorknobs.
3. The Top rail - is the top most horizontal member of a shutter
4. Lock rail - is the middle horizontal member of a door shutter, to which locking arrangement is fixed
5. Bottom rail is the lowermost horizontal member of a shutter.
6. Panel - This is the area of shutter enclosed between the adjacent rails.
7. Mullion -Doorstop - a thin slat built inside the frame to prevent a door from swinging through when closed, which might break the hinges.

SIZES OF DOORS

1. The size of a door should be such that it would allow the movement of largest object or tallest person likely to use the door.
2. As a rule, the height of a door should not be less than 1.8 m to 2 m. The width of the door should be such that two persons can pass through it walking shoulder to shoulder.
3. Standard sizes of exterior doors are 1.0 m wide, increasing in 2" increments.
4. Most residential interior doors are 0.9 m wide and 2.0 m high except when designed to allow wheelchair access, then 1.0 m wide.
5. Garage doors are generally 2.25 wide for a small-cars.
6. Larger commercial, public buildings and grand homes often use doors of greater height. Older buildings often have smaller doors.

Residential buildings

1. External door: 1.0 m x 2.0 m to 1.1 m x 2.0 m
2. Internal door: 0.9 m x 2.0 m to 1 m x 2.0 m
3. Bath & W.C door: 0.7m x 2.0 m to 0.8m x 2.0 m
4. Garage doors: 2.25 m x 2.25 m to 2.25 m x 2.40

Public Buildings

1. Schools :1.2 m x 2.0 m
2. Hospitals :1.2 m x 2.1 m
3. Libraries :1.2 m x 2.25 m.

TYPES OF DOORS

There are different types of doors used in building works classified based on placing of components, method of construction, working operations and construction material used. A door is an accessible barrier which is provided in a wall opening to give an access to the inside of a room of a building. The internal portions of a building are connected by doors.

Various types of doors are in use which may be classified on the basis of arrangement of shutters, method of constructions, principles of working operations and materials used. Commonly used doors are briefly explained below:

HINGED DOORS

1. A hinged door is the most common door and has been in existence for a lot longer. The door is fixed on one side to allow the door to pivot away from the doorway in one direction or the other. The Axis of rotation is vertical.
2. A hinged door traditionally has 2-3 hinges on the vertical long edge of the door and is either left or right-handed. A hinged door can be fitted to swing inwards or outwards.
3. In this system, the door is attached to the door jamb with the help of typically two or three hinges.
4. In case the door is wider and bigger, the number and quality of hinges have to be increased accordingly to give the door a better support. These doors open outwardly at a 90-degree angle.
5. Hinge-based doors have been in existence since ages, and despite the rocking entry of its more contemporary peer sliding doors, they still remain as popular as ever.
6. They are versatile and easy to both install and remove, which makes them very popular. They also come in a number of different varieties to meet different requirements.
7. A hinged door is one that is suspended in a passageway by several hinges on one side that connect it to the wall and allow it to swing open and closed.
8. The door can then be pushed or pulled to open and close it. Most hinged doors swing only in one direction and when closed lie flush to the door jamb. Some, however, can swing both ways which makes them easier to open and close but makes them less insulated.

ADVANTAGES OF HINGED DOORS

- Mostly cheaper because they are more common
- Less maintenance
- Easier to install
- A greater selection of handles
- A greater variety of styles
- Cheaper to install
- Easier to maintain
- One side can be used for attaching robe hooks or belt & tie racks
- Greater range of locking systems

DISADVANTAGES OF HINGED DOORS

- Less aesthetic if a sleek look is required
- Takes up more space
- Can be affected by wind if not restrained
- Can be a safety hazard if left ajar.

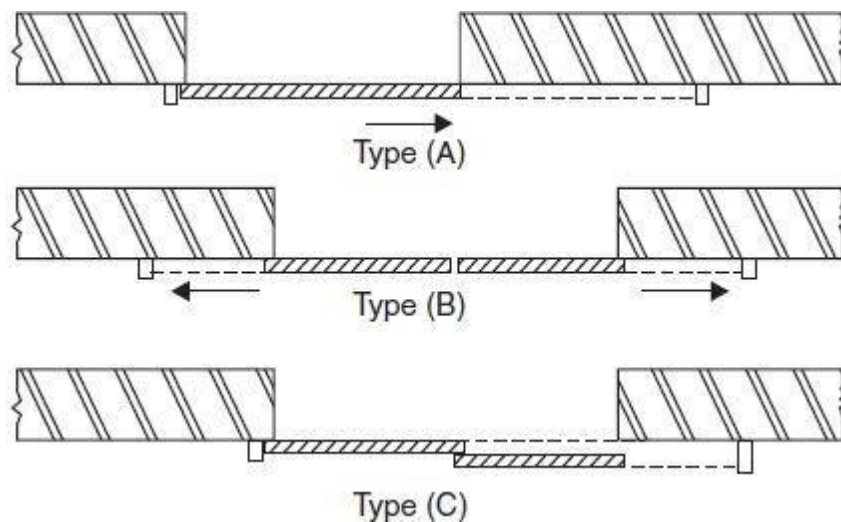
SLIDING DOORS

A sliding door is an elegant aesthetic to any home or places providing euphony. Sliding door opens crosswise by sliding which is parallel to the wall. It has a horizontal mechanism. Slide door is also known as “Patio Door”. It is commonly used as shower door, glass door, screen door or in vans. It permits people to both enter and leaves. It is usually considered a single unit which consists two-panel sections.

A sliding door is usually made of wood, aluminium, stainless steel but it appears in its best form when it is made from UPVC plastic glass. A sliding door offers different design possibilities.

1. In this type of doors, shutter slides on the sides. For this purpose, runners and guide rails are provided.
2. Sliding shutters may be one, two or even three. Such doors are used in banks, offices etc.
3. In this type, with the help of runners and guide rails the door slides to the sides. The door may have one or more sliding shutter depending up on the opening available.
4. Sliding doors are built to glide horizontally on metal tracks fixed on top and bottom frames.

5. There are rollers on the side of the door for opening. On opening, these shutter-like closings recede in a slot, without interfering with the outward space.
6. Today, sliding doors are a popular choice to be placed in areas that lead to the backyard and patios. They are also a popular choice as kitchen and wardrobe doors.



ADVANTAGES OF SLIDING DOORS

Sliding Door has many advantages providing-

1. The best feature is you don't need any extra room to open the door.
2. It makes a room soundproof; thus, it can be used for a private space.
3. It has a security mechanism which can be used for office entrance, elevators, patios door or even a room divider.
4. A Sliding door made of glass enhances natural light in.
5. It has efficient insulators which ensure the perfect temperature in the room.

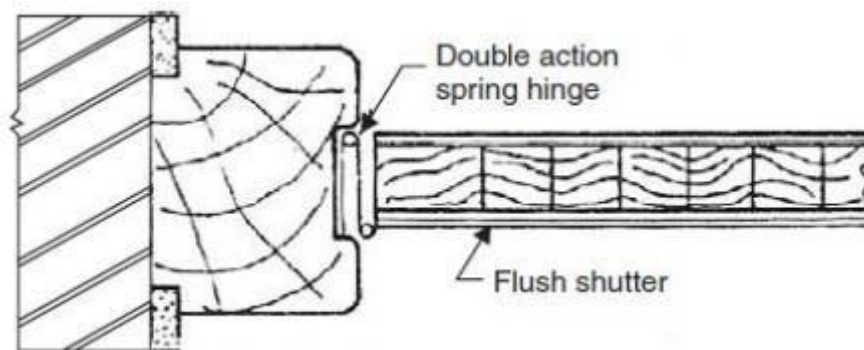
DISADVANTAGES OF SLIDING DOORS

Also, there are few disadvantages of sliding doors-

1. The installation is not a cakewalk as it is harder to install.
2. The trail of a sliding door is a magnet for dirt and sludge.
3. It can become a fingerprint magnet.
4. More expensive
5. More maintenance
6. Less locking options
7. Less style options
8. One side of the door can't be utilized as a hanging space

SWING DOORS

1. Swing Doors are same as hinged doors, but here the Hinge can be rotated in either direction.
2. Swing door has its shutter attached to the frame by means of double action springs. Hence shutter can move both inward and outward.
3. They may be single shuttered or double shuttered. Such doors are preferred in offices and banks.
4. Since these doors can open on both sides it is desirable to provide glass panels or peep holes to enable user to see the persons from other.
5. The swinging door is a simplified and easy technique.
6. It is mainly a swinging hurdle that will close the entrance to a room or building or vehicle.
7. Swinging on a double hinge. it opens in either direction as automated. Sometimes it can swing open in both directions. Mostly, a swinging door is made of steel, metal, aluminium or solid MDF glass.
8. It is especially important to get the hand and swing correctly as the transom is usually sloped and sealed.
9. Specifying an incorrect hand or swing can cause the door to be blind. It can be reversed or a normal swing. Nowadays, automatic swinging doors are much in demand.



ADVANTAGES OF SWING DOOR

Advantages of swinging doors are followings

- People use swinging doors in laundry, saloon or kitchen
- It is convenient
- gives a good impression.
- it's a great way to create privacy
- It saves energy than the other doors, in other ways, it is energy efficient

- Such door swings closed by itself.

DISADVANTAGES OF SWING DOOR

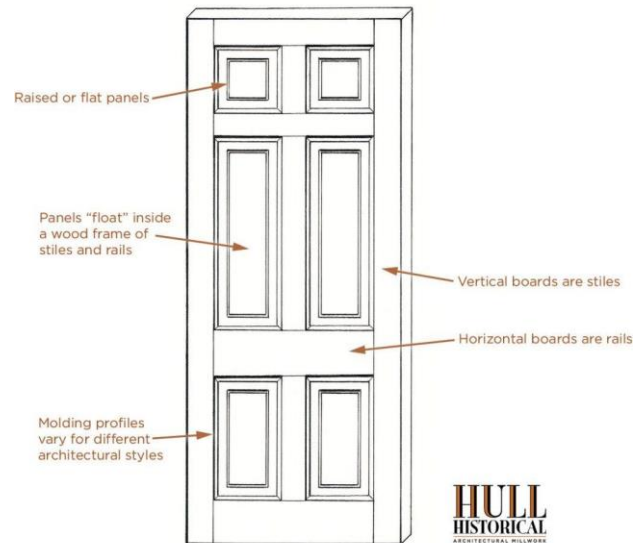
Swinging doors have some disadvantages too.

- If the door opens inward and there is an accident inside, there can be a crush of people.
- Space - they require a certain amount of free space to open.
- Door frames - this is an additional cost and reduces the width and height of the doorway.
- Rusting - A common problem when choosing cheap hardware is that the hinges rust and the door starts to creak and difficult to open. This problem is especially important for doors and entrance doors in high humidity environments.

PANELLED DOORS

1. Panel Door are made with traditional wood joiners like rails, stiles and infill panels, which are assembled to make the door.
2. They can be crafted with various kinds of wood and available in different types of colours. They have a long history and been around in the construction industry for many years.
3. Panel doors have always been a preferred option in the building industry.
4. Panel doors are widely used in construction work. They are quite popular for numerous reasons.
5. Panel doors are hard and offer extra beauty to doors of home. There are lots of options available for panel doors. You can easily find panel door with single panel, double panel, three panels, six panels, etc.
6. It is mostly used in house construction that is strong and gives better appearance. It is also known as rail and stile door.
7. Constructed with panels and installed between rails and stiles that is the outside frame of door.

CHARACTERISTICS OF PANELED DOORS



ADVANTAGES OF PANELLED DOORS

1. Panel doors are hard and strong so they are used as exterior doors.
2. They are more elegance and natural beauty.
3. They can be made to any design as architect requirement.
4. They can be made easily in any shape.
5. They also hold up better in the everyday use.
6. It is very difficult to accidentally punch a hole in a panel door.
7. They also typically require less maintenance.
8. They are weather proof as compare to other doors.
9. They can be finish with paint or polish as per requirement.
10. They are eco-friendly as release no gas as the case of flush
11. They provide privacy in homes as more sound proof.
12. Hollow core solid panel doors are less expensive.
13. Hollow core solid panel doors are lighter in weight.
14. They are easy to install.

DISADVANTAGES OF PANELLED DOORS

1. Solid Panel doors are costly
2. They need more daily cleaning as dust retain more on the door as compare to flush door.
3. Required skilful cleaning as it collects dust quickly
4. Glass panel doors are not resistant to high blows.

LOUVERED DOORS

1. Whenever privacy as well as ventilation is required, such doors can be used.
2. Louvers are the glass, wooden or A.C. sheet strips fixed in the frame of shutter such that they prevent vision but permit free passage of air.
3. The doors may be fully or partially louvered. Such doors are commonly used for public bathrooms and latrines.
4. Louvers are made up of timber or glass or plywood and these may be either fixed or movable.
5. A Louvered door is formulated with an arrangement of the horizontal blades of wood, glass, or additional materials called Louvres.
6. Louvered Doors are utilized when privacy with the natural ventilation and quietness for rest is needed, as they enable available passage of air even when closed.

ADVANTAGES OF LOUVERED DOORS

1. The first advantage when utilising louvered doors is design – rather than being solid, the doors utilise louvers like window shutters. This kind of door looks beautiful in any household and they never go out of style.
2. The louvered door can select between half-louvered and full-louvered doors. Your selection will depend on your style. Considerable see half louvers as better elegant but full louvers give a more architectural style design.
3. An additional advantage of louvered doors is ventilation. If you travel a lot or barely keep your closet doors closed highest of the time your closet can get stuffy. Shifting to louvered doors will maintain air circulating, keeping any mustiness at bay.
4. Louvered doors similarly offer the illusion of additional space in a room. If the space is lesser l, adding these doors can generate a new openness to home.
5. They are also relatively cheap, even when design is customized. This indicates you can be stylish without having to expense much.

6. They are versatile sufficient to fit a variety of door styles, everything from a sliding door to an accordion-style door.
7. Louvered doors can be created from a wide range of woods contain processed wood and repurposed wood. Apart from wood, manufacturers also utilise nylon, PVS, and composite acrylic to create these doors.
8. The doors resemble wood but they are inexpensive and can be recycled effortlessly.

DISADVANTAGES OF LOUVERED DOORS

1. The main disadvantage of the louvered door is maintenance.
2. There are additional ridges and hard-to-reach places on a louvered door than a horizontal panel door and this can produce cleaning challenges.
3. Certain bendable feather dusters create daily cleaning much simpler but when it is time for a deep clean be prepared to spend additional time.

GLAZED DOOR

1. This type of door is used in residential as well as public buildings like hospitals. schools or colleges etc.
2. With a view to supplement the natural lighting provided by windows or to make the interior of one room visible from the adjacent one, glazed or sash doors are provided in several designs.
3. They can be glazed fully or partly. Fully glazed doors are recommended in situations where sufficient light is required through the door opening as in the case of shopping or display centres, lobbies, entrance halls etc.
4. In case of partly glazed doors, normally the bottom one-third height of the door is panelled and the remaining two-third is glazed.
5. In case of partly glazed doors, the styles are sometimes diminished at the lock rail to improve the elevation and to permit more area of glazing in the process. The diminished styles are known as gun stock stiles.
6. Glazed or slash doors are the same as framed/panelled doors, except one of the panels is replaced with glass to improve the visibility of the interior room.

ADVANTAGES OF GLAZED DOOR

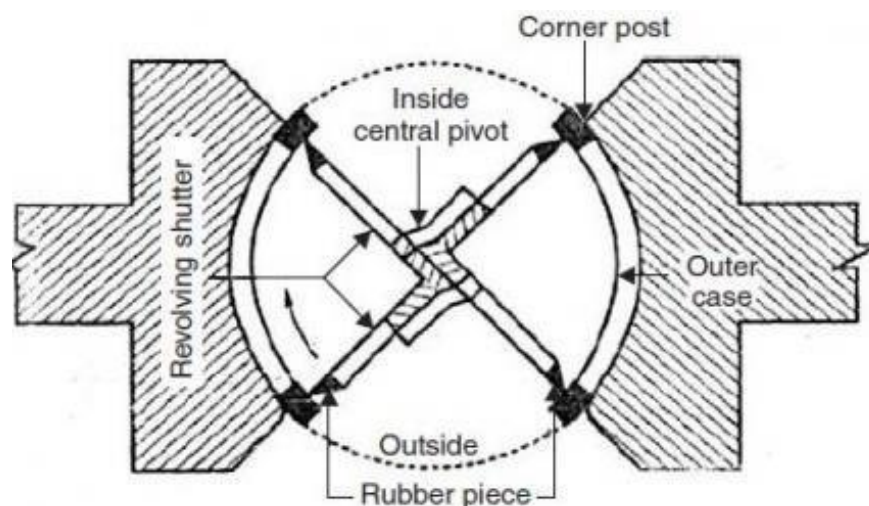
- The main advantage of glazed glass is that it helps in insulation by reducing the heat gain and heat loss. Adding multiple layers of glass with gas infill further protects the windows and building from heat loss.
- Another advantage of glazed door is that it increases the energy efficiency in buildings. The reduced heat transfer lowers the electrical power consumption required for heating or cooling of the space. This drastically cuts down the electrical bills especially in areas subjected to extreme heat or cold. The use of low-e glass and reflective coatings can further improve the efficiency of the windows by further limiting the heat transfer.
- Insulated glass also helps in sound insulation and improves the acoustics of the place. The inert gas present in between the two panes of glass does not allow noise to pass through and acts as a barrier between the interiors of the building and the noise that is present outside the building.
- There is a reduction in the amount of direct sunlight and UV rays that enters the room through the windows. This prevents the fading of photographs, paintings, curtains, carpets and sofa fabrics than can be caused by the UV effect of sun rays.
- Insulated Glass doors can also act as a safety and security window. It is difficult and takes longer time to break an insulated glass unit in comparison to a single pane window.

DISADVANTAGE OF GLAZED DOOR

- The disadvantage of glazed door is that it is very expensive initially. However, over a period of time it becomes very cost effective as it drastically helps in reducing the electricity costs.
- The glazed door unit must be carefully sealed with a silicone sealant to prevent any leakage of the air that is present in between the glass panes.
- Any leakage might result in condensation and damage of the Insulated Glass unit.
- Once damaged the glass pieces cannot be removed and repaired because of which the whole window will have to be replaced.
- Insulated glass extensively finds its use in green buildings and plays a very important role by reducing the building's Carbon footprint and making it sustainable.

REVOLVING DOOR

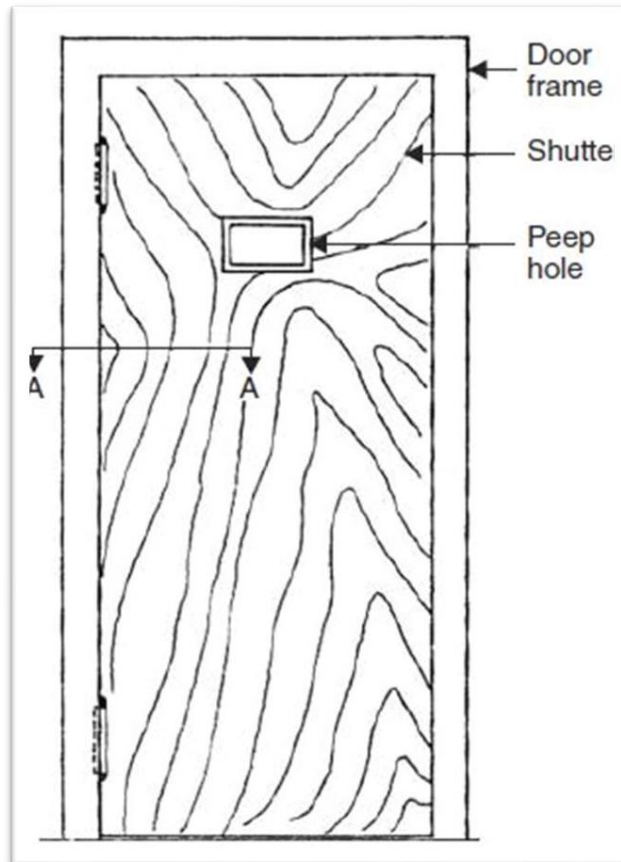
1. Revolving doors are only provided in public buildings like museums, banks, libraries etc., because of constant visitors. It consists mullion at its centre to which four radiating shutters are attached.
2. Revolving door provides entrance on one side and exit on the other simultaneously keeping the opening automatically closed when not in use.
3. The door is so assembled as to exclude the wind drought. This type of door is advantageously provided in places where there is a regular foot traffic of people entering in and going out of the building especially when it is air conditioned or situated at a place where strong winds blow for most part of the year.
4. The door essentially consists of four leaves radially attached to a centrally placed mullion in a circular opening.
5. The mullion or the central member is provided with ball bearing at the bottom and bush bearing at the top, so as to enable the door to revolve smoothly without producing jerks.
6. The leaves and the mullion are enclosed in a vestibule. At their edges the leaves are provided with rubber pieces which fit flexibly against the inside face of the vestibule.
7. The shutters may be partly or fully made up of glass.
8. A circular space of entrance is provided within which shutters rotate. As shutters rotate, they give entrance on one side and exit on other side.
9. They are very much required in entrance to air-conditioned public buildings.

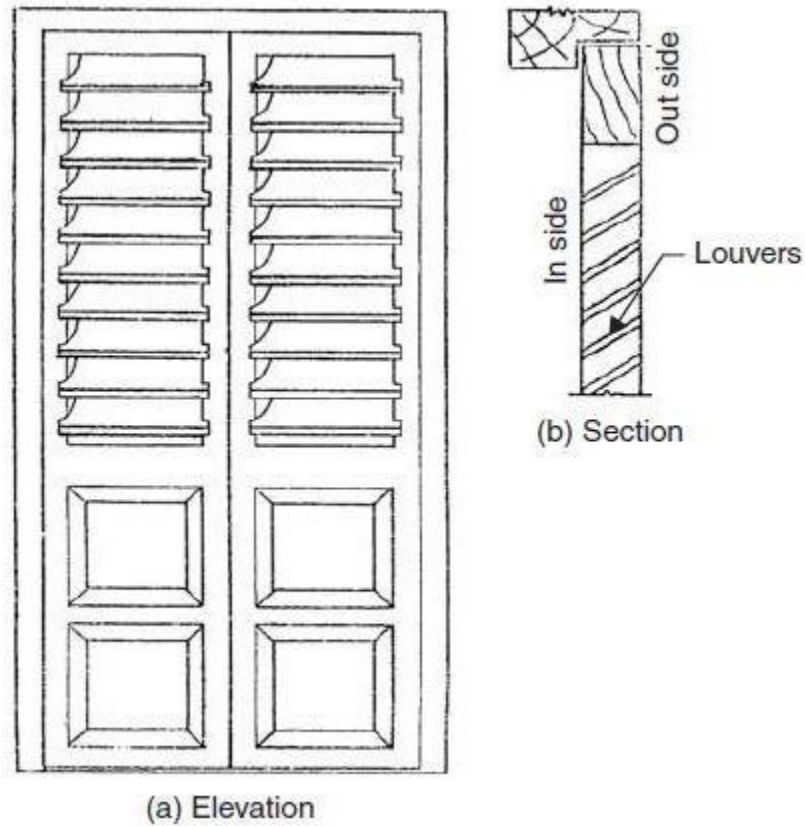


FLUSH DOORS

- The shutters of these doors are made of plywood or block boards.

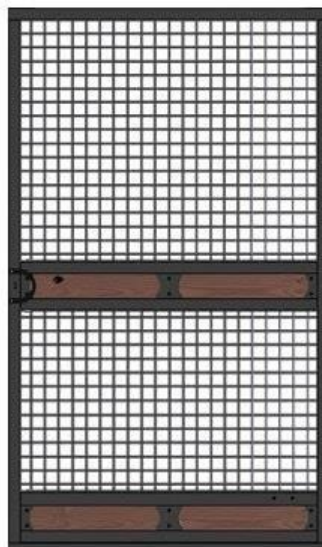
- They are of uniform thickness. These shutters are available with different attractive veneer finishes.
- The time consumed in making such doors at site is quite less. These doors are suitable for interior portion of a building.
- Nowadays flush doors are commonly used in residential and office buildings.
- These type of doors are widely used because of good appearance, economic, ease of construction and greater durability.





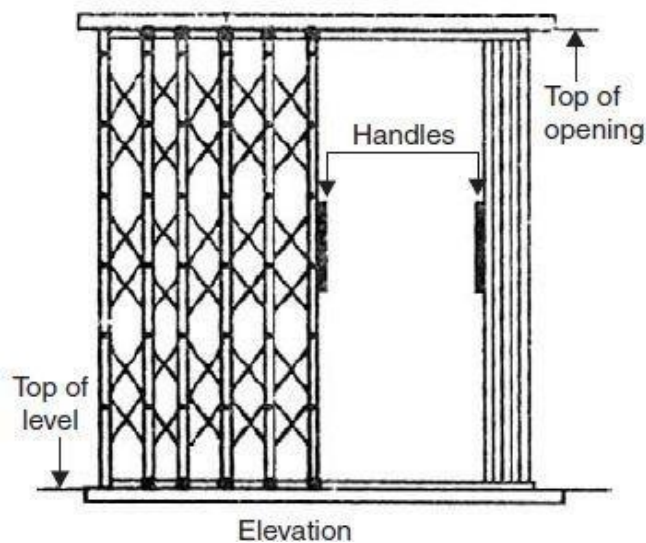
5. Wire Gauged Doors

- Wire gaged doors permits natural ventilation and restrict the entry of flies, mosquitoes, insects etc.
- These doors are commonly used in hotels, restaurants and for cup boards containing eatables



COLLAPSIBLE STEEL DOORS

- Collapsible steel doors are generally used for workshops, sheds, warehouses etc. They are commonly used for front doors, bank locker rooms, school and college entrance doors.
- It acts like a steel curtain which will be opened or closed by horizontal pull or push.
- Vertical double channel units of (20x10x2 mm) are spaced at 100 to 120 mm thick and are braced flat iron diagonals 10 to 20mm wide and 5mm thick.
- Steel channels 16 to 20 mm wide are used as verticals. They are placed with 12 to 20 mm gap. Steel flats 16 mm to 20 mm wide and 5 mm thick are hinged to them
- The rollers are provided at their top as well as at bottom so that shutter can be pulled or pushed sideways with slight force.
- There may be single or double shutters. Usually these doors are used for additional safety.



WINDOWS

A window is defined as an opening in a wall of a building to serve one or more of the functions like natural light, natural ventilation and vision. The construction of window is identical to that of door. Window consists of a window frame and shutters. The frame consists of two vertical members called jambs, one flat, i.e. horizontal member connecting the jambs at top, known as head and another flat member connecting the jambs at their feet, known as sill. The shutter can be fully glazed, panelled and glazed or only panelled type. Windows are normally provided with two shutter leaves.

The selection of size, shape, location and the number of windows to be provided in a room depends upon the following considerations:

- a) Size of room to be lighted. Location of the room and its utility.
- b) Architectural treatment to be given to the building.
- c) Direction of wind and its speed.

d) Climatic factors prevailing at the site such as humidity & temperature variation. Based on these considerations the following thumb rules have been framed to determine the area requirements for windows in a room; and, the size and hence, the number of windows can thus be worked out once total area required for window opening is known:

- a) The total area of window openings should normally vary from 10 to 20% of the floor area of the room. In hot and arid regions it could be 10 to 15% of the floor area. When the building is to be located in hot and humid regions, the area of window awnings should vary between 15 to 20% of the floor area.
- b) In case of public buildings like, schools, offices, factories, hospitals etc., the minimum area of windows should be 20% of the floor area.
- c) For adequate natural light the total area of glass panes in windows should be at least 8% of the floor area.

Components of A Basic Window

A window is comprised of two parts:

1. Window frame, and
2. Sashes or shutter frame.

Window frames are fixed to the opening in the wall, by means of suitable hold fasts.

The sashes or shutter frames are fixed to the window frames by means of suitable hinges.

The window frame has sill at the bottom, unlike doors.

The function of the window is to admit light and air to the room and to give a view to the outside.

It should also provide insulation against heat loss and, in some cases, against sound. **Windows**

Components

1. Pane (for glazing): the plate of glass – usually 1/8th inch thick for single pane
2. Sash: The portion of the window that slides or pivots when you open and close the window unit. The sash includes the glass, its supporting framework, locks and lifts
3. Rails: Top and bottom parts of the sash
4. Stiles: sides of the sash
5. Stops: holds the sashes in place when sliding or stops a closing window that pivots

6. Jamb: The side of the window frame
7. Sill: the bottom of the window frame
8. Head: The top of the window frame
9. Muntin's or mullions: Used to divide the plane into several sections
10. Casing or trim: the decorative material usually wood that covers from the edge of the window frame to the finished wall
11. Stool: horizontal piece at the bottom of the window opening.

TYPES OF WINDOWS

There are different types of windows used in building construction to provide ventilation, and view. The selection of windows depends on many criteria.

Various windows used may be classified on the basis of materials used, types of shutters, types of openings of shutters and the position of windows. Timber, steel and aluminium are commonly used to make window frames. Timber may get termite attacks; steel may rust but aluminium do not have any such defects. However, they are costly.

1. Sliding Windows
2. Pivoted Windows
3. Double Hung Windows
4. Casement Windows
5. Corner Windows
6. Bay Windows
7. Dormer Windows
8. Clerestory Windows
9. Glazed Windows
10. Gable Windows
11. Skylights

CASEMENT WINDOWS

1. Casement windows are the widely used and common windows nowadays.
2. The shutters are attached to frame and these can be opened and closed like door shutters. It swings out to the side or up to open.
3. Rebates are provided to the frame to receive the shutters.

1. The panels of shutters may be single or multiple. Sometimes wired mesh is provided to stop entering of flies.
2. Many casements have fairly large glass panes to provide ample light that is uninterrupted by muntin bars or other framings.
3. Casements also typically offer more open ventilation area than other window types.
4. When closed and locked casement windows can make a very effective seal for improved energy performance.
5. The shutters are attached to frame and these can be opened and closed like door shutters.



ADVANTAGES OF CASEMENT WINDOW

1. Excellent for ventilation
2. Easy and low maintenance
3. Good quality insulation
4. Comes in variety of designs and materials

DISADVANTAGES OF CASEMENT WINDOW

1. Difficult to use with window screens since it usually cranks outwards.
2. Not very secure
3. Size Limitations

DOUBLE HUNG WINDOWS

1. Double hung windows consist of pair of shutters attached to one frame.
2. The shutters are arranged one above the other. These two shutters can slide vertically

3. within the frame. So, we can open the windows on top or at bottom to our required level.
4. To operate the double hung windows, a chain or cord consisting metal weights is metal provided which is connected over pulleys. So, by pulling the weights of cord the shutters can move vertically. Then we can fix the windows at our required position of ventilation or light etc.
5. The double hung window type is the most common type of window in houses because of its practicality and functionality.



6. It is similar to a single hung window however both the lower sash as well as upper sash can move up and down and usually tilt out.

ADVANTAGES OF DOUBLE HUNG WINDOW

1. Very easy to own and comes inn many designs and built which matches every architectural design.
2. Easy maintenance since both the upper and lower sashes can be manipulated to allow ventilation inside.
3. Like the single hung window type, it is perfect for narrow outside spaces
4. Affordable
5. Energy efficient

DISADVANTAGES OF DOUBLE HUNG WINDOW

1. Limited ventilation
2. Depending on the materials and functionality, this type of windows is not as ait tight as other window types in the market.

PIVOTED WINDOWS

1. In this type of windows, pivots are provided to window frames.

2. Pivot is a shaft which helps to oscillate the shutter.
3. No rebates are required for the frame.
4. The swinging may either horizontal or vertical based on the position of pivots.
5. These windows are similar to casement windows except that no rebates are present and the shutter movement is slightly different.
6. The shutters are allowed to swing around pivots and allow more light than side hung windows.
7. The windows can be pivoted horizontally or vertically and easy to clean.
8. The movement of such windows ranges from 90 degrees to 180 degrees.



ADVANTAGES OF PIVOTED WINDOWS

1. The unique ability to open wide allows the owner to maximize ventilation and lighting.
2. The opening is wide enough that the window can be easily and safely cleaned from any side.
3. Pivot windows are constructed from a variety of quality materials that will provide a life time of use.
4. They provide all season protection from the elements and because they pivot, it is possible to let in ventilation into an area without letting the rain and snow in as well.
5. These windows offer the option of locking the door from the outside in many cases.

DISADVANTAGES OF PIVOTED WINDOWS

1. Due to the pivot design this type of window takes up more space than regular double hung windows.
2. If pivot window is not installed correctly there is a good chance that it will leak air,

3. making the window more efficient at heating and cooling the space.
4. These windows are an expensive option to have installed due to their costly raw materials.
5. Pivoted windows are one of the most insufficient windows in terms of security. They can be easily opened from the outside than a casement window.
6. Installation and maintenance are difficult
7. They can get damaged easily and it can get stuck easily in-between.

SLIDING WINDOWS

1. In this case, window shutters are movable in the frame.
2. The movement may be horizontal or vertical based on our requirements. The movement of shutters is done by the provision of roller bearings.
3. A sliding window opens by sliding horizontally along a top and bottom track in the window frame.
4. It is similar to sash window, but opens side to side instead of up and down.
5. Sliding windows are often used to frame a view and commonly in modern or contemporary style houses.
6. Generally, this type of window is provided in buses, bank counters, shops, etc.



ADVANTAGES OF SLIDING WINDOW

1. Minimal Maintenance: Sliding windows have fewer parts than conventional windows, and are low maintenance.
2. Durable: because they do not rely on springs and pulleys which wear or fail over time.
3. Economical: sliding windows are more cost effective than other types of windows. They will last for much longer with much less maintenance and so the cost of repairing or replacing the window is reduced.
4. Functional: It can be easily fitted with flyscreens, so no bugs/ insects will let in the

5. home while letting the fresh air in.
6. Energy Efficiency: Sliding window accept a variety of glazing, from the standard single glazing to safety glass and double glazing.
7. Easy to Use: Sliding windows are not heavy and require very little effort and dexterity to open and close.
8. Do not protrude out: It does not project outward, so they work well next to patios and walkways.
9. Escape: Normally, the sliding window opening is big enough for an emergency evacuation.

DISADVANTAGES OF SLIDING WINDOW

1. Half Opening: only one half of the window can be opened at a time.
2. Fitting: Sliding window fit less hermetically, so they are generally less water and air tight and their sound and thermal insulation properties are generally poorer than in casement windows.
3. Cleaning: Unlike other types of windows that can be tilted inside for easy cleaning, it is challenging to clean the outside of sliding window especially during winter months.

GLAZED WINDOW

1. Glazing is inserting glass into windows or fixing glass into an opening in the building external wall.
2. Glass pieces can be fixed onto the window sashes with putty, these sashes are made of Aluminium, Wood or PVC, the sashes are further fixed to the window frames with hinges.
3. The Glazed windows could be made of tempered glass, float glass, heat-soaked glass, low-e glass etc. The process of old glazing and replacing it is known as Reglazing.
4. Glazed windows could be single glazed; double glazed or triple glazed windows. The double and triple glazed windows are also known as Insulating windows.
5. The Insulating window acts an energy efficient window that reduces the absorption of any heat from the exteriors and vice versa.
6. It also has excellent sound insulation properties. The windows could further be tinted in order to prevent any glare.
7. Double glass windows comprise of two pieces of glass that are separated by a spacer. The gap is filled with an inert gas like argon or krypton which acts as an insulating barrier. These panes of glass are further sealed with silicone sealants.

ADVANTAGE OF GLAZED WINDOW

Energy Efficiency

1. Double glazed windows absolutely come out on top when it comes to energy efficiency. They lock in the cool air from your air conditioner in summer, leaving the unwanted heat outside.
2. With no long-term solution in sight for power prices, consumers need to look for ways to offset household energy costs. One way to do this is to install double glazed windows. It means dramatically reducing your power bill.

Prevent Mould Forming Indoors

Like dangerous mould, which can trigger asthma attacks and even infect lungs in serious cases. Double glazing reduces condensation so prevents mould from happening to begin with.

Noise Reduction

An impressive advantage of double glazing is it keeps noise at bay. The sound of busy S traffic and walkers-by won't affect sleep-in with glazed windows.

Safety and Security

Glazing of windows improves both safety and security. They are harder to break than normal windows. That means they are safer if you have small children, and also make break-and-enters a whole lot harder.

DISADVANTAGES OF GLAZED WINDOW

1. The main disadvantage of a glazed window is the expense. There is no denying that they cost more than single glazing. The cost of indoor climate control home should be in the figures use to compare double and single glazed windows.
2. Once you add the extra cost of climate control to single glaze, they end up being the more expensive choice. You can also offset costs by choosing a quality supplier with reasonable pricing.
3. Hard to Repair: Double glazing can be susceptible to issues with the air gap.
4. If this is breached and allows moist air to enter, you can develop an unsightly problem with condensation. This will also lessen the insulating and sound-absorbing qualities of the windows.
5. If this happens, it is very difficult to repair them. The only viable option will be to have the window replaced. Depending on the style and size of the window, this could be very costly.

BAY WINDOW

1. Bay windows are projected windows from wall which are provided to increase the area of opening, which enables more ventilation and light from outside.
2. The projection of bay windows are of different shapes. It may be triangular or rectangular or polygonal etc.
3. They give beautiful appearance to the structure.
4. Bay and Bow windows are variations on a theme. They are similar in that they both project outward from an exterior wall.
5. On the inside they offer a great spot for a window seat/ a place for small decorative accessories.
6. Bay windows are usually made up of 3 windows, a centre window that's flanked by two windows that are angled back from the centre window.



ADVANTAGES OF BAY WINDOW

1. Adds space and aesthetic touch to the room.
2. Gives an enhanced panoramic view of the outside.
3. Can instantly transform the look of the house by adding an elegant touch.

DISADVANTAGES OF BAY WINDOW

1. Can possibly block narrow outside space.
2. Replacement and maintenance is costly

CORNER WINDOWS

1. As in the name itself corner windows are provided at the corners of room. That means corner windows has two faces in perpendicular directions.
2. By providing this type of windows, light or air can be entered into room in two different directions.
3. To provide this type of window special lintel is provided in the wall.
4. Corner windows will give aesthetic appearance to the building.



ADVANTAGES OF CORNER WINDOW

1. The corner glass window is an effective way to bring light to the interior spaces of the house.
2. They are suitable for any space which needs day lighting. Its is most appropriate for living area, kitchen, dining and study room.
3. Corner window adds a fashionable touch to the house.

DISADVANTAGES OF CORNER WINDOW

1. Difficult to light, can be obstructed by sunrise and set.
2. The jamb post at the corner is made of heavy section.
3. Both light and air is admitted from two directions.
4. Flooring difficult to fit, may have quite small corners which cannot fit merchandise.

CLERESTORY WINDOWS

1. Clerestory windows are small, arched windows that allow light to enter a building from the side.
2. They were originally designed to provide additional light and ventilation for churches and other religious buildings.
3. If the rooms in a building are of different ceiling heights, clerestory windows are provided for the room which has greater ceiling height than the other rooms.
4. The shutters able to swing with the help of cord over pulleys. These also enhances

5. the beauty of building.



DORMER WINDOWS

1. Dormer windows are provided for sloped roofs. These are projected from the sloping surface as shown in below image.
2. They provide ventilation as well as lighting to the room. They also enhance aesthetic sense of room.
3. Dormer windows are both functional and attractive.
4. Dormers are built on roof and often contain a window. They project outwards vertically beyond the plane of the roof.
5. They are mainly provided to illuminate the rooms towards the middle of the building.



ADVANTAGES OF DORMER WINDOWS

1. Dormer create more space under angled roofs and make it possible to have windows in those spaces for natural light.
2. The dormer roofs are a great way to increase the space in lofts and attics.
3. The window openings also bring the natural light into the small spaces.
4. The user can enjoy improved ventilation in homes with roof top windows.
5. Dormer windows are available in different shapes, sizes and styles. It makes it easy to create a unique appearance for the buildings.

DISADVANTAGES OF DORMER WINDOWS

1. It requires considerable technical skills and specific in-depth knowledge on the process to construct the windows properly.

2. Installation also requires ample time.
3. Installation cost is very high due to the high-level technical knowledge.
4. The protruded design of the windows gives them higher exposure to the elements.
This necessitates frequent maintenance.

GABLE WINDOWS

1. Gable windows are provided for sloped roof buildings. These windows are provided at the gable end of sloped roof so; they are called as gable windows.
2. They also improve the appearance of building.
3. They are required in the stair cases or in the halls with gable walls.



ADVANTAGES OF GABLE WINDOW

1. They are easy to install. This is due to the fact that they can be fitted into pre made spaces, which are carved out of the walls during construction.
2. They are inexpensive. This is mainly due to the fact that they can be mass produced, and only need limited carpentry work done on them.
3. They can be easily removed if necessary because there is not much attached to them besides the window itself, along with framing lumber for supporting it, which is easily removed as well.
4. There is less chance of water damage to the wall because they don't come in contact with it.
5. They allow light inside the attic space by focusing on the exterior, providing more illumination to the room.

DISADVANTAGES OF GABLE WINDOW

1. The window pane is not large enough to offer adequate ventilation to people inside it.
2. They are not the most ideal type of window for security purposes. It is possible to break into them because of their small size.
3. They loose efficiency over time due to the fact that space they are placed in does not

get enough.

4. They don't work well with solar panels because of their small size and also because the suns change in angle during the day, which taints some of the sunlight coming through them.

SKYLIGHTS

1. Skylights or generally provided on the top of sloped roofs.
2. To admit light into the rooms, sky lights are provided. It is provided parallel to the sloping surface. Sky lights can be opened when required.
3. Lead gutters are arranged to frame to make it as waterproof.
4. This type of window is commonly seen on vacation houses and cabins because besides that fact that it conserves energy, it also provides a beautiful view of the sky from the outside.

ADVANTAGES OF SKYLIGHT

1. Brightens the dark area with natural sunlight.
2. Provides indirect solar light.
3. Aesthetically pleasing and compliments well with any interiors.

DISADVANTAGES OF SKYLIGHT

1. Expensive to install and maintain.
2. Can sometimes cause roof leaks.
3. Can potentially damage roof structurally.

ARCHES

Arches have been a common element in architecture since the time of the Etruscans who are placed with its innovation, although the Romans improved it further and circulate its use. The techniques included in designing and constructing arches have since been acquired into several other structural forms, containing vaults, arcades, and bridges.

DEFINITION

An arch is a structure constructed in curved shape with wedge shaped units (either bricks or stones), which are joined together with mortar, and provided at openings to support the weight of the wall above it along with other superimposed loads. Because of its shape the loads from above get distributed to support (pier or abutment).

MEANING

The brick or stone blocks are formed with circular shapes on the door or window or opening with the purpose of resisting the pressure of the upper load. So, the circular frame that is specifically created by brick or stone blocks is known as the arch. It is arranged both sides support the opening. The objective of the Arch is to bear its own weight as well as other upper body weight on both side support.

The arch provides the following benefits:

1. It provides a robust abutment.
2. It is applied in a greater extent.
3. It is most suitable where the weight is bigger.
4. The structure is applied to enhance the look of any construction.

Arches are compressive structures. There are no tensile stresses in these structures due to its basic geometry. They are self-supporting and stabilized by the force of gravity acting on their weight to hold them in compression. This makes them very efficient and stable, capable of larger spans, and supporting greater loads than horizontal beams.

KEY TERMS

The following are the different components of arches and terms used in arch construction:

1. Intrados

The inner curve of an arch is called as intrados

2. Extrados

The outer curve of an arch is called as extrados

3. Voussoirs

The wedge-shaped units of masonry which are forming an arch is called as voussoirs.

4. Crown

The highest part or peak point of extrados is called crown.

5. Keystone

The wedge-shaped unit which is fixed at the crown of the arch is called keystone.

6. Abutment

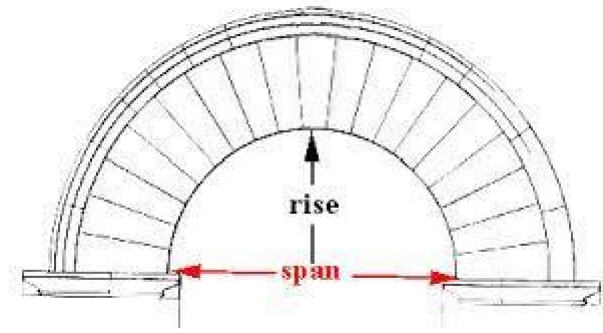
The end support of an arch is called as abutment.

7. Rise

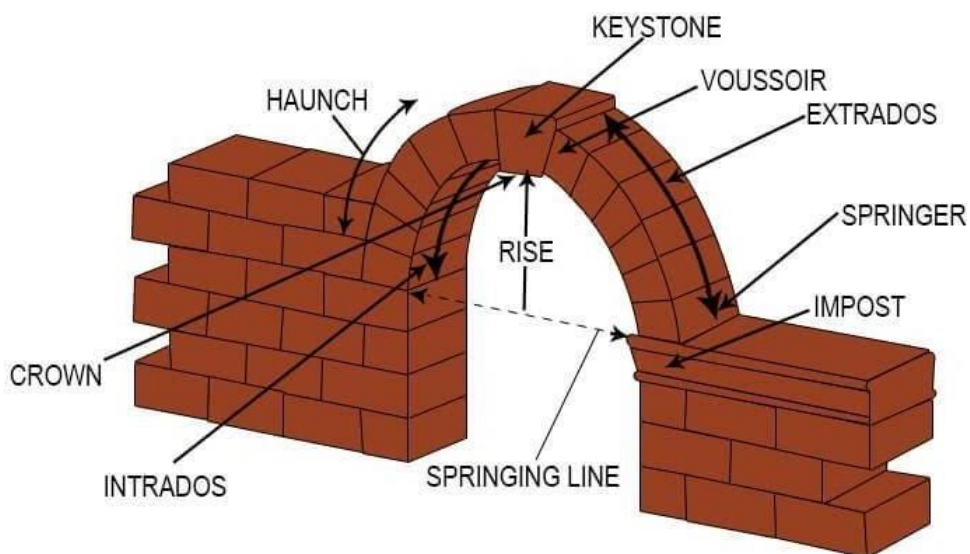
Rise is the vertical distance between the springing line and the highest point on the

intrados.

8. Span



The clear horizontal distance between the two supports of the arch.



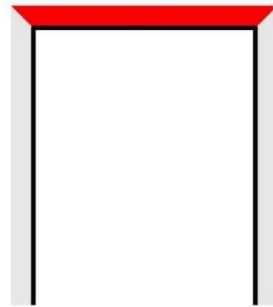
TYPES OF ARCHES

Based on the shape of construction arches are classified into following types and they are discussed below.

1. **FLAT ARCH**

- The Flat arch creates an equilateral triangle within Intrados as a base at an angle of 60° degrees. The Flat arch is normally utilized for the construction of light load structures.
- The Extrados in the Flat arches is straight and Flat.
- The intrados is similarly Flat and provided a slight increase of camber of about 10 mm to 15 mm.
- For flat arch, the intrados is apparently flat and it acts as a base of equilateral

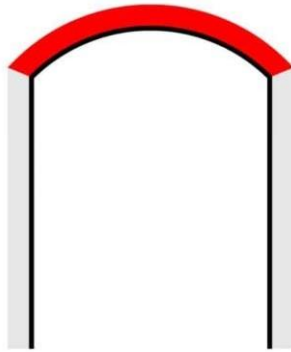
- triangle which was formed by the horizontal angle of 60° by skewbacks.
- A flat arch is generally the weakest arch.
- These flat arches are generally used for light loads, and for spans up to 1.5m.



Flat Arch

SEGMENTAL ARCH

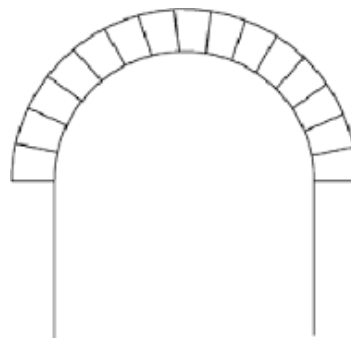
- This is the basic type of traditional arch used for buildings in which Centre of the arch lies below the springing line.
- In segmental arch, the thrust Transferred in inclined direction to the abutment.
- Considered one of the strongest arches available, it is able to resist thrust.
- The segmented arch is a type of arch in which a circular arc is less than 180° degrees. This type of arch is recognized as a Syrian arch.
- The segmental arch is one of the toughest arches which has a decent capacity to withstand thrust.
- The Romans were the first who invented the segmental arch.
- This type of arch was normally utilized in the construction of residential windows and doors within the 20th century.



Segmental Arch

SEMI CIRCULAR ARCH

- This is the modification of segmental arch.
- The semi-circular arch is in the centre will lie on the spring line.
- In the semi-circular arch, the thrust transmitted to the abutment is completely in a vertical direction. The shape of the arch looks like a semi-circle.
- The shape of arch curve looks like semi-circle.
- In this type of arch, the Centre lies exactly on the springing line.



- Also known as the Roman arch, the Semi-circular Arch forms a half circle and is a major feature of all Roman architecture.

HORSE SHOE ARCH

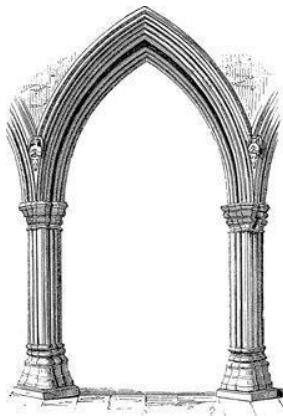
- Horse Shoe Arch is in the shape of horse shoe which curves more than semi-circle. This is generally considered for architectural provisions.
- The horseshoe arch, also called the Moorish arch and the keyhole arch, is the emblematic arch of Islamic architecture.
- Horseshoe arches can take rounded, pointed or lobed form.
- The curves of the horseshoe arch bulge out from the springing points to create a horseshoe profile.

- They were widely used in Islamic architecture in regions such as Spain and North Africa.



POINTED ARCH

- The other name of pointed arch is Gothic arch.
- In this type of arch two arcs of circles are met at the apex hence triangle is formed.



- This may be either isosceles or equilateral.

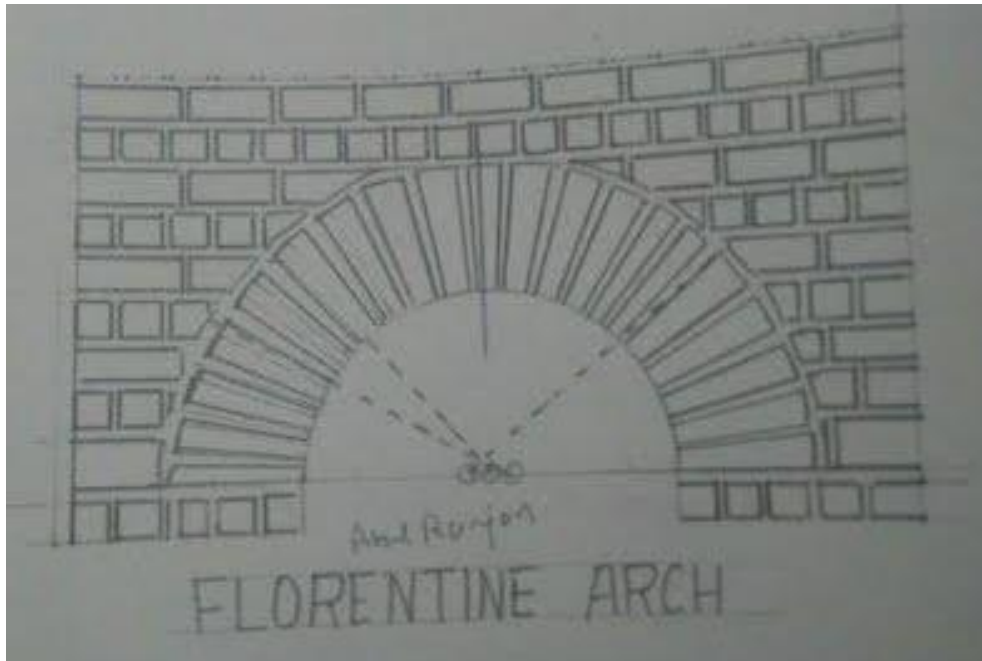
VENETIAN ARCH

- Venetian arch is also pointed arch but its crown is deeper than springing line.
- It contains four Centre's, all located on the springing line.
- A Venetian arch is a three-centered arch, all placed on the springing line.



FLORENTINE ARCH

- A semicircular arch having its extrados struck from a higher point than its intrados so that the length of the voussoirs is longer nearer the top of the arch.
- Intrados of arch is in the shape of semi-circle and rest of the arch is similar to Venetian arch.
- It has three Centre's, all located on the springing line.

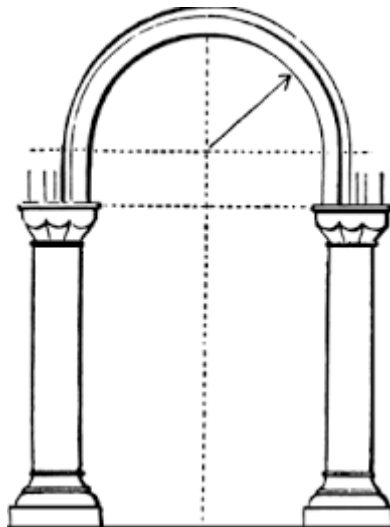


RELIEVING ARCH

- Relieving arch is constructed above flat arch or on a wooden lintel to provide greater strength.
- In case of relieving arch, we can replace the decayed wooden lintel easily without disturbing the stability of structure.
- The ends of this arch should be carried sufficiently into the abutments.
- Its lintel can be replaced without effecting the Arch.

STILTED ARCH

- An arch whose curve begins above the impost line.
- It consists a semicircular arch with two vertical portions at springing.
- The center of the arch lies on the horizontal line.
- Stilted Arch consists of a semi-circular arch with two vertical portions at the springing's



SEMI ELLIPTICAL

- It has shape of semi-ellipse.
- It has either three centre or five centre.
- Also called a basket-handle arch.



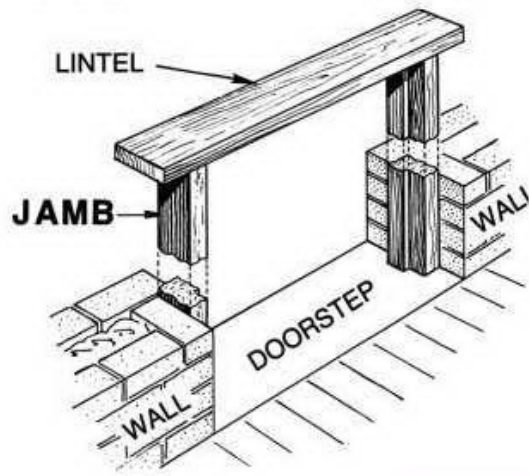
LINTELS

A lintel is a pervasive part of buildings. Whenever to create an opening like doors & windows in the building, lintel is used above the opening as a simple solution. lintel construction is simple and it is very commonly used.

A lintel is a beam placed across the openings like doors, windows etc. in buildings to support the load from the structure above. The width of lintel beam is equal to the width of wall, and the ends of its built into the wall.

The main function of the lintel is to take loads coming from above wall and transfer its load to the side walls. The lintel beam generally ends in the masonry wall to convey the weight carried by them to the masonry walls, and its width is the same as the wall width. The lintel can likewise be utilized as an enlivening compositional component.

LINTEL



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PURPOSE OF LINTEL

Followings are the purposes of lintel beams:

1. To support the walls above the openings like doors, windows, etc.
2. To provide a safeguard of the windows and doors.
3. To withstand the imposed loads coming from above bricks or block including the roofing members.
4. To transfer its load to the side walls.
5. Sometimes lintels are used as a decorative architectural element.

FUNCTIONS OF LINTEL

1. They are provided over an opening to support the proportion of structure above it.
2. Lintels act as a beam.
3. They support the load acting over the openings.
4. They provided openings for doors, windows, ventilators, cupboards, wardrobes,

PARTITION

Partition-walls are a significant component of a building design. Without partition walls, a building's plan cannot be decorative or structured. Partition Wall can be constructed as a load-bearing wall or non-load bearing wall. The load-bearing partition wall is known as the internal wall. These internal walls do not carry any weight. Sometimes partition wall may be folded, collapsible, or fixed type. Partition walls or walls can be constructed in various shapes like – thin, light, or thick, heavy, etc. Mainly, these walls' requirements are based on building materials and design.

1. A partition is a wall within a building which divides the inner space into rooms or areas. Usually load-bearing and permanent non-load bearing partitions are constructed on site, whereas movable partitions are prefabricated and assembled on the site.
2. Movable partitions are used where the walls are frequently opened up to form one large floor area. Sliding partitions are used as a series of panels which slide in tracks fixed to the floor and ceiling .
3. Structural stability is essential to all partitions. Partitions may be required to offer sound insulation, fire resistance, design flexibility and provision for electrical services.
4. Partition walls can be solid, typically constructed from brick or blockwork, or can be a framed construction.
5. Framed partition walls are sometimes referred to as stud walls, and can be constructed from a timber, steel or aluminium frames clad with boarding such as plasterboard, timber, metal or fibreboard. Partition walls may also be glazed.
6. They may be purpose-designed and constructed or may be modular systems, and can incorporate openings, windows, doors, ducting, pipework, sockets, wiring, skirting, architraves and so on.
7. As they are non-load bearing, partition walls can provide good flexibility, particularly if they are lightweight, framed systems, as wall positions can be changed relatively easily and inexpensively without impacting on the overall structure of a building.
8. Depending on the nature of the construction, it may be possible to re-use some, or all of the components of the wall in a different location.

9. They may also be movable. Movable partition systems include:
 - Pipe and drape systems with telescopic or fixed horizontal and vertical components that create a removable panel system.
 - Free-standing screens.
 - Folding partitions.
 - Sliding partitions with tracks attached to the floor and ceiling.
10. Movable partitions are commonly found in exhibitions spaces, hotels, offices and so on.
11. A partition wall may also be a party wall, that is, a wall that stands on the land of two or more owners. In this case, works to the wall may be subject to the requirements of the Party Wall Act.
12. The specification of partition walls will depend on the requirements for weight, cost, speed of installation, availability of materials, longevity, durability, flexibility, ease of reconfiguration, sound and fire insulation and surface finish.
13. They may also be required to a perform a secondary structural role, for example supporting cupboards or shelving.

FEATURES OF PARTITION WALL

Partition walls are solid walls that are mainly constructed either using brick or blockwork or framed construction. The framed partition walls are also called as stud walls. These are made out of timber, glass, steel, etc. In total, there are around 9 main types of partition walls used in building construction.

Partition walls can be either in-situ, purpose-designed, or modular systems. These walls can incorporate openings for doors, ducts, windows, wiring, skirting, architraves, etc.

REQUIREMENTS OF PARTITION WALL

1. It should be strong enough to carry its own weight.
2. It should act as a sound barrier when it divides the space.
3. It should possess enough strength to support some wall fixtures sinks washbasins extra.
4. It should support suitable decorative surfaces.
5. It should be light, thin, cheap, fire-resistant, and easy to construct.

ADVANTAGES OF PARTITION WALL

1. It helps to create privacy in activities. It divides the space of the room for different types

of works for easy access.

2. The partition wall is thin in nature so, it occupies less area within the room. It is lightweight so, it does not provide more extra load on the structure.
3. They are cheaper to construct as compared to the load-bearing walls. It can be constructed easily in any shape and can be redesign within less time.

TYPES OF PARTITIONS

Nowadays, a building has multi-rooms and the partition walls divide these rooms. To occupy room privacy and service, partition walls are the best choice and may be constructed for various purposes in different types and shapes. However, depending on building materials, design, and requirements, partition walls can be of different types. Such as:

1. Brick Partitions Wall
2. Reinforced Brick Wall
3. Hollow & Clay Brick Partition Wall
4. Concrete Partitions Wall
5. Glass Partitions Wall
6. Straw Board Partitions
7. Plaster Slab Partition Wall
8. Metal lath Partition Wall
9. A.C. sheet or G.I. Sheet Partitions Wall
10. Wooden Partition Wall
11. Lumber Partitions
12. Asbestos Cement Partitions

13. Double Glazed Window

TIMBER PARTITION WALL

- This type of partition walls that consists of a wooden framework is either supported on the floor below or by side walls.
- The framework consists of a rigid arrangement of timber members which may be plastered or covered with boarding etc from both the sides.
- Such partitions are not fire-resistant and the timber forming the partition is likely to decay or be eaten away by white ants.
- The use of timber partition walls is decreasing.
- This frame work made of horizontal and vertical members, can either be plastered or covered with boarding etc. from both the sides.
- Wooden partitions are light weight, but are costlier. It is likely to decay or eaten away by termites.
- Also, it is not fire resistant.

ADVANTAGES OF TIMBER WALL

1. Timber walls divides the space efficiently.
2. Add depth to the space.
3. Timber is an extremely versatile material, with a number of finishes available as part of partition system.
4. It's also a fantastic option for interior pieces, as it is familiar, warm and provides a natural element of beauty.
5. Timber partitions create a stunning feature wall.

DISADVANTAGES OF TIMBER WALL

1. It is likely to crack, warp, bend and decay, if not properly seasoned and not treated with the preservatives.
2. There are many applications for which timber is unsuitable due to durability issues.
3. It requires careful regular maintenance.
4. It is subjected to risk of fire. Timber can burn making it a less than ideal material to use in applications where fire safety is a concern.

5. If not readily available, it proves to be costly.
6. It is also susceptible to termite attack if not maintained properly.

R.C.C. PARTITION WALL

- It is similar to plain brick partition but reinforced brick is much stronger due to the placement of reinforcements.
- Reinforcements, which is in form of wire mesh strips or iron bars, are placed at every third or fourth course.
- Reinforced wire strip width ranges from 25mm to 28mm and thickness is 1.6mm.
- Steel bar diameter is 6mm
- The thickness of the wall equal to 10cm or half a brick
- This type of partition wall used when better longitudinal bond is need and when the partition wall has to support other super imposed loads.
- These types of walls are constructed with the help of plain concrete cement or reinforced concrete cement. The concrete partition wall can be solid or hollow.
- These types of walls are constructed in situ or pre-cast.
- They are strong, durable, and easy to handle. Its main advantage is that it is faster and economical in construction.

CAST IN SITU CONCRETE PARTITION WALL

- Thickness ranges from 80mm to 100mm
- It is poured monolithically with intermediate columns
- It is rigid and stable both in vertical and horizontal directions but the framework is costly.
- The reinforcement consisting of mild steel bars or B R C fabric is placed in the center of the wall thickness.
- Concrete mix usually adopted in the work is M15 (1:2:4).

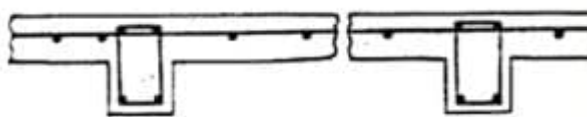


Fig.10: Cast in situ concrete partition wall

PRECAST CONCRETE SLAB PARTITIONS WALL

- the wall is built from precast concrete slab units

- precast unit thickness ranges from 25mm to 40mm
- precast units are secured to precast posts
- joints shall be filled with mortar
- Concrete mix is M15 (1:2:4).

ADVANTAGES OF R.C.C PARTITION WALL

- There are many advantages of precast concrete. They are discussed below.
- Saves Construction Time: Precast Concrete construction saves time, the risk of project delay is also less. The precast concrete casting can be carried on simultaneously with other works on site such as earthwork, survey, etc. and thus saves time.
- Quality Assurance: The key factors which regulate the quality of construction such as curing, temperature, mix design, formwork, etc. can be monitored for Precast Concrete. So, improved quality construction can be performed.
- Usage of Prestressed Concrete: By using pre-stressed precast, structural materials of high strength and load-bearing capacity can be achieved, which can result in greater clear span, reduced size of the cross-section of structural members, etc.
- Cost-effective: The simplified construction process reduces the time, increases the productivity, quality and safety and thus the cost is reduced.
- Durability: Precast Concrete structure has a longer service time period and minimal maintenance. The high-density Precast Concrete is more durable to acid attack, corrosion, impact, reduces surface voids and resists the accumulation of dust.
- Aesthetics: As the structures are prefabricated in a controlled factory environment, several combinations of colors and textures can be used. A wide range of shapes and sizes are available to choose from with smooth finishing and thus the aesthetical value of products are increased.
- Safe Construction Platform: No raw materials have to be stocked in site for Precast Concrete construction. It reduces the requirement of traditional formworks and props, wastage, workers, etc. and thus provides a safe working platform.

DISADVANTAGES OF R.C.C PARTITION WALL

The disadvantage of R.C.C partition wall are

1. **It** is not very easy to install.
2. It is quite costly

3. Need a skilled person for installing this kind of wall.

METAL PARTITION WALL

- Non-load bearing partitions which consist of a framework of metal studding.
- Metal studding is lightweight but very strong and stable.
- The framework is usually covered with ordinary plasterboard sheets or special fire-resistant sheets which, when finally sealed, offer good sound and fire resistance to the partition.
- Often used in public buildings such as offices and hospitals as it is:
 1. Quick and easy to erect.
 2. Cost-effective.
 3. Suitable for all types of buildings as well as residential housing.
 4. Available in a variety of finishes to the completed partition.
 5. It is light in weight, fireproof and strong and is easy to construct and shift.
 6. An insulating material is filled into hollow spaces.
 7. It is Utilized for office and industrial buildings and is also made of metal lathes supported and supported by wires.

Metal Lath Partition Wall

- Metal lath partition walls are skinny, strong, durable, and inconsiderably incombustible.
- It needs a framework of steel or timber for fixing it in position.
- Lath is tied by galvanized iron wire to soft-cast steel bars or channels spaced 15 to 30 cm apart. It will be plastered on both sides and maybe improved insulation against heat and sound.
- The metal lath and plaster partition walls-cavity. Metal lath on either side of specially formed steel channels spaced at 30 to 45 cm apart.
- The channels are usually 3 to 10cm deep.

A. C. Sheet or G.I. Sheet Partitions Wall

- These partition walls are economical, light-weight, and rigid if appropriately created. It is fastened to the border of wood or steel.
- Each slab consists of a core or furrowed asbestos cement sheet (5mm) with the plain asbestos cement sheet (10mm) connected to that on either facet.

CONCLUSION

The importance of doors, windows, claddings etc. are very important in a building. The beautifully designed and decorated house doors add beauty and elegance. That is why it is said that civilized, disciplined and evolved society is one where people can sleep at night leaving the door open. Hence these elements are very important in building

Partition walls can provide good flexibility, particularly if they are lightweight, framed systems, as wall positions can be changed relatively easily and inexpensively without impacting on the overall structure of a building. Depending on the nature of the construction, it may be possible to re-use some, or all of the components of the wall in a different location.