Carpentry Works

- **Doors**

The door is a movable barrier that separates internal and external spaces. It is usually attached to the frame on one side by hinges. A door provides access, protection, security and privacy. Ironmongery (أعمال الحديد) is an important part of door furniture

Performance standards

A door, depending on the type, should meet certain standards for:

- Weather resistance
- Security
- Fire resistance
- Sound insulation
- Privacy
- Operation
- Durability

- **Weather resistance:**

  External doors need a minimum gap of 2mm for free movement. This gap should be sealed to make the door weather-resistant

- **Security:**

  The Security of a door depends on the materials used, the quality of the frame and the ironmongery. Internal doors only need to provide minimal security. For example , a bathroom door might be fitted with a simple lock. External doors need to be constructed to high specifications and fitted with high-security locks.

- **Fire resistance:**

  Internal doors that separate spaces are usually made of materials that prevent the rapid spread of fire. They are also heavy enough to be self-closing.

- **Sound insulation:**

Heavier doors provide better sound insulation.

- **Privacy:**

Solid doors are the most private. If some light is needed while retaining privacy, then obscure glass (زجاج معتم) should be fitted.

- **Operation:**

  Doors can swing or slide open and closed. Most doors swing on hinges fixed to door frames. Spring-loaded latches usually hold doors closed. You normally open doors with knobs or levers (مقابض).

Spring-loaded latches

Knobs

Levers

- **Durability**

  Doors are in constant use. Their construction should be strong enough to withstand considerable activity. A door should not fall off the edge fixed to a frame under its own weight. External doors should be able to resist climatic extremes, which can cause the shape to warp (تشوه, فتل)

- **Sizes of doors:**
- There is no specific rule which can fix the size of a door. It is preferable if the height and width conform to the brick size so that it can be fixed between proper courses.
- Basically it depends upon the necessity of the requirement of its uses. Rooms in which furniture, beds, etc. are to be moved in and out may have door opening not less than 1.00m. Stores, kitchen, bath and W.C's may have narrow door openings.

For residential buildings, the following sizes are recommended:

- Living room 1200x2100mm
- Drawingصالون room 1200x2100mm
- Dining room 1200x2100mm
- Lounge 1200x2100mm (غرف استراحة)
- Bed room 1200x2100mm
- Kitchen 900x2100mm
- Bath or W.C'S 900x2100 or 800x2100mm

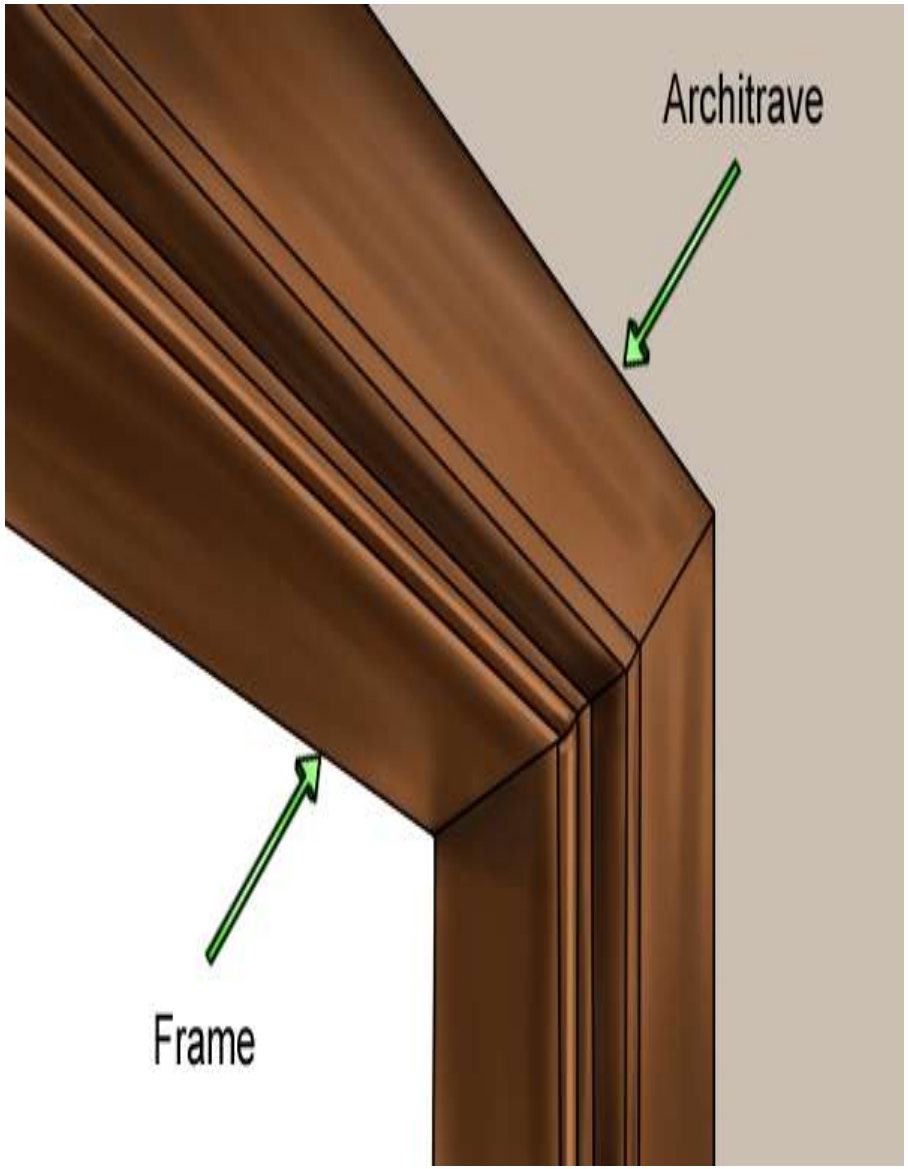
- **Technical words for parts of a door:**
- **Main parts of the door:**

- **Sill**

  a horizontal member at the base of an external door that separates the internal and external structure. It should slope so the rain water flows outside rather than inside.

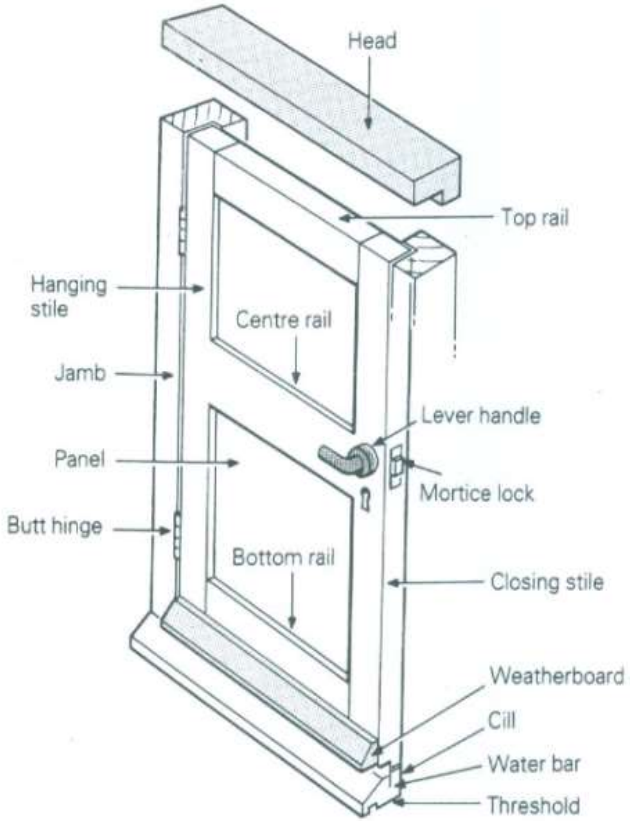
- **Frame**

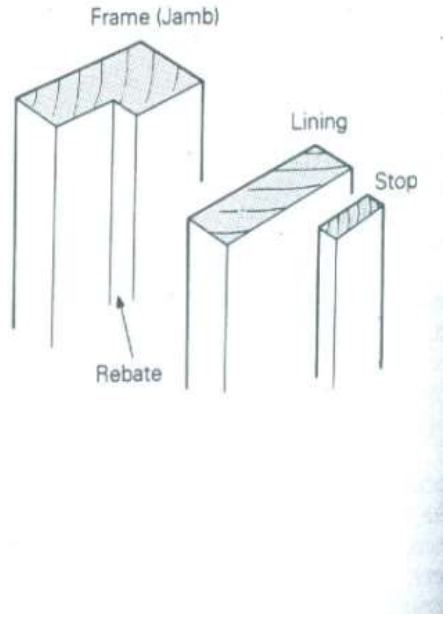
  a solid timber or metal structure fixed to the wall. It is constructed so that it forms a seal when the door closes and supports the doors weight.

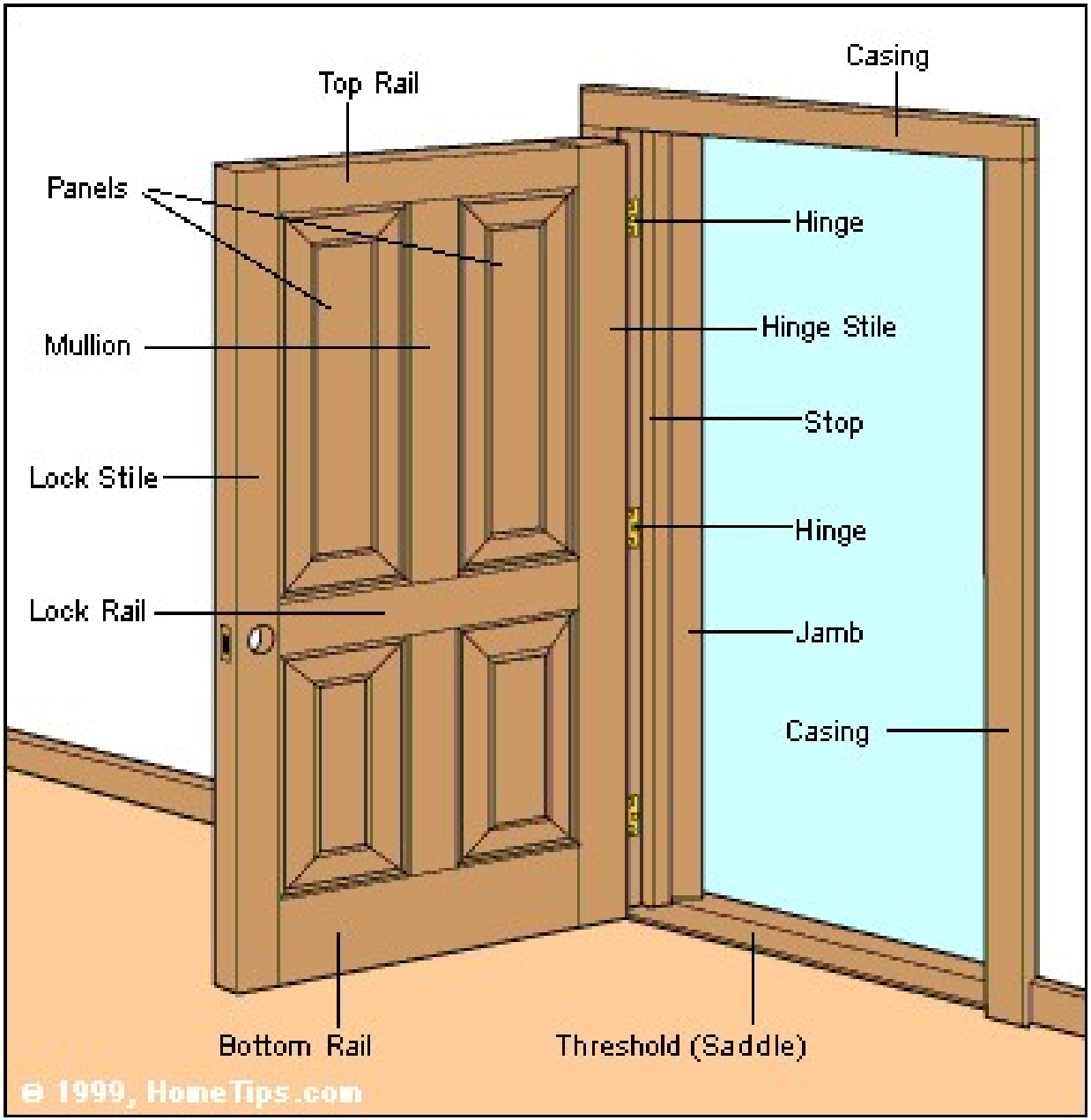

Architrave
Frame

- **Head**

  the horizontal piece at the top of the frame.






Casing
Top Rail
Panels
Hinge
Hinge Stile
Mullion
Stop
Lock Stile
Hinge
Lock Rail
Jamb
Casing
Bottom Rail
Threshold (Saddle)
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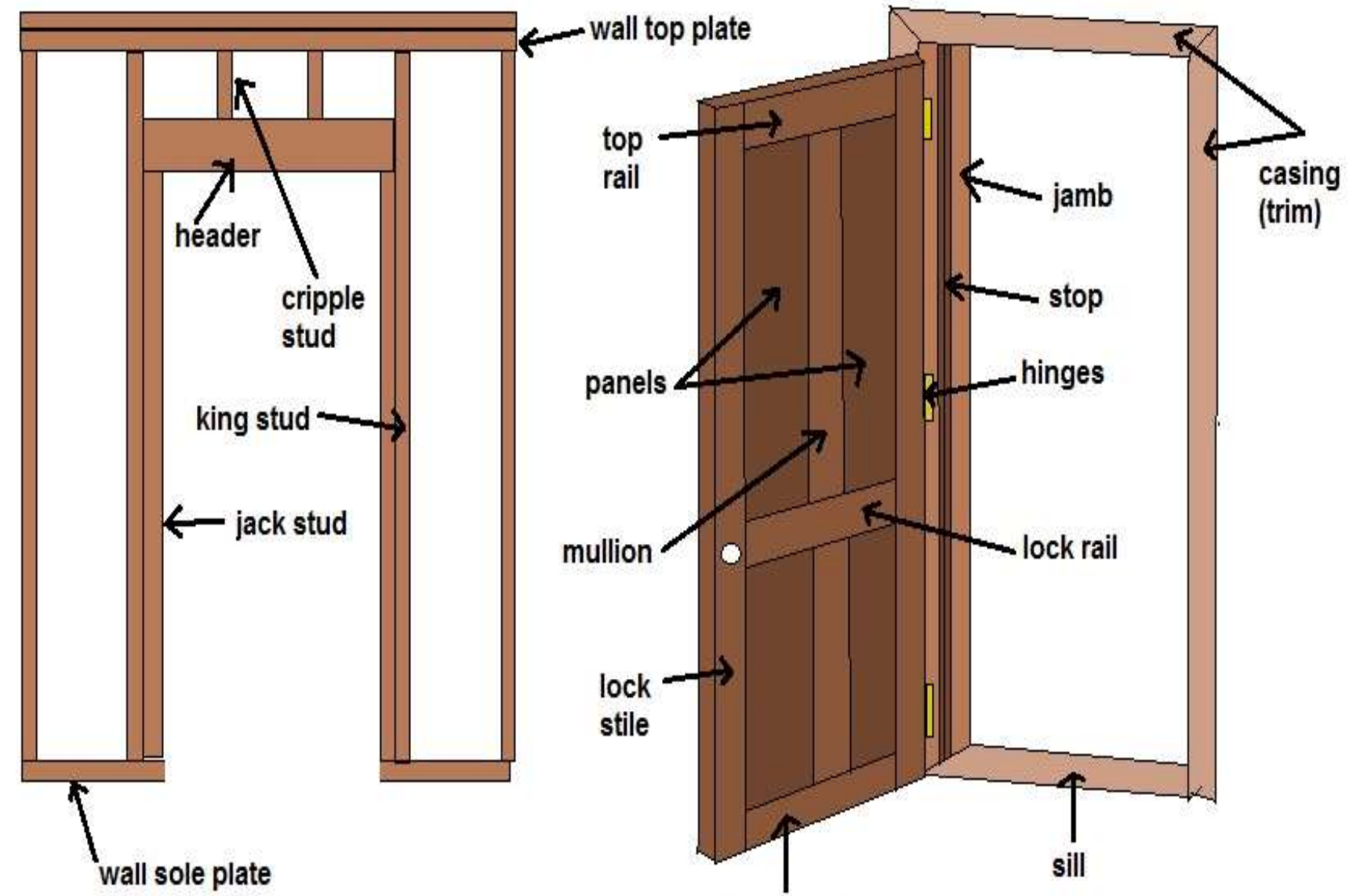


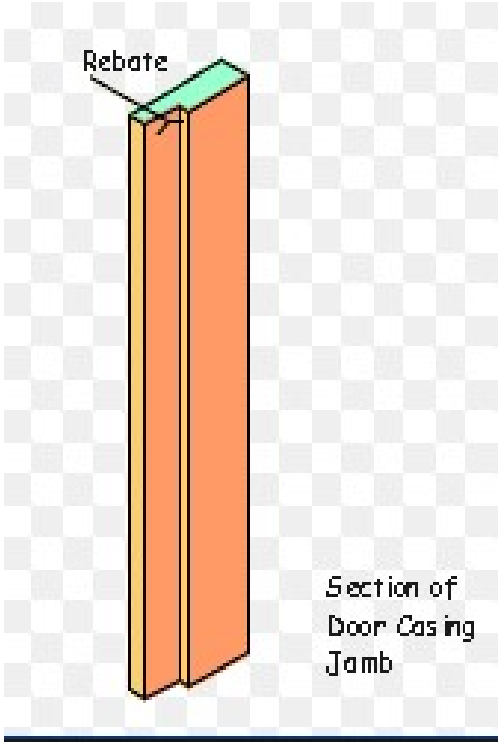
ROUGH DOOR OPENING

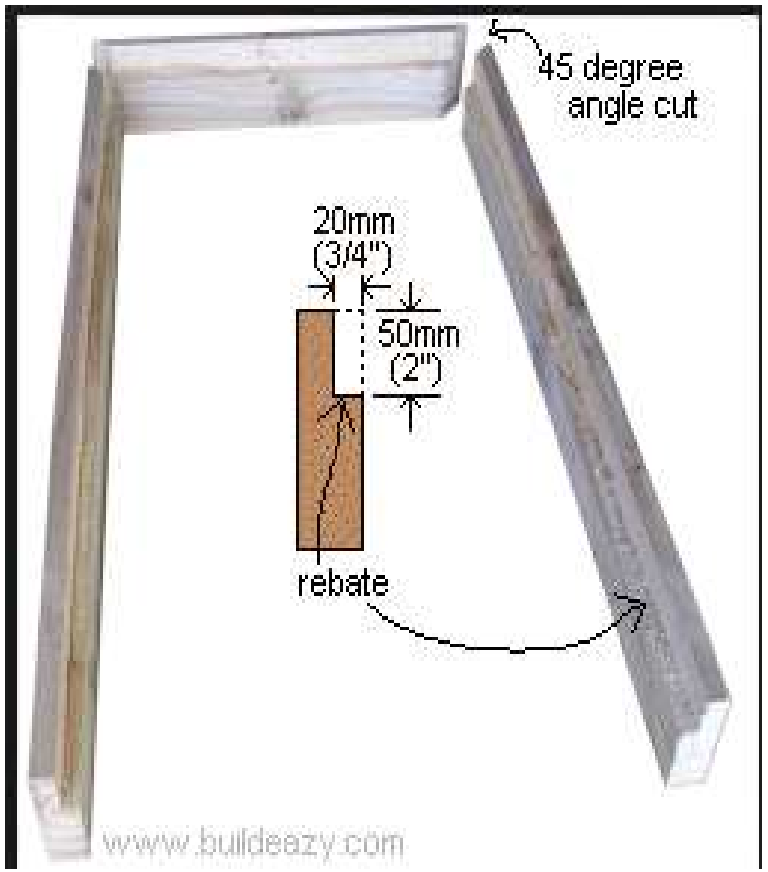
DOOR TERMS

- **Jamb**-the vertical part of the frame that is fixed to the wall

- **Lining** (البطانة)-the timber framework inserted into an opening in an internal wall.

- **Rebate**-a recess in the door frame that seals the edges of a door





- **Stile**-The outer vertical piece of the door frame

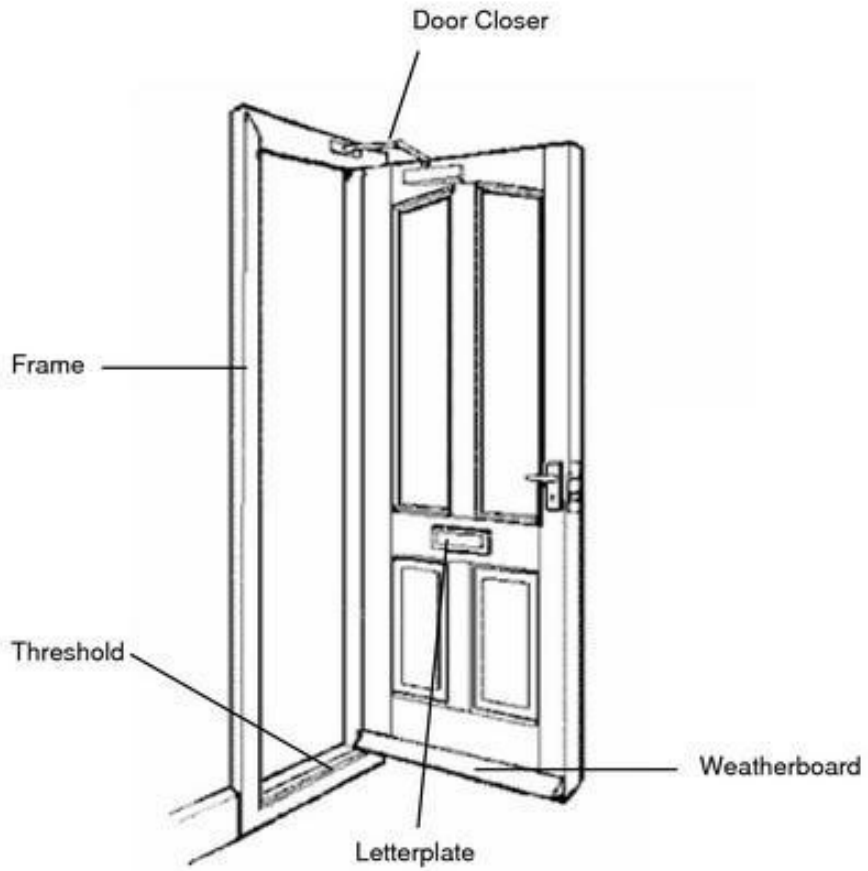
There are three types of stile

- Hanging stile that the door hangs on
- Closing stile that holds the lock or latch(المزلاج)
- Meeting stile where a pair of doors meets in the middle

- **Stop**-a thin piece of timber fixed to the head and jambs of the lining to form a rebate

- Threshold(العتبة)-The access point in the doorway where you enter or exit. The sill is part of the threshold

- **Weatherboard-** a horizontal piece fixed to the external bottom edge of a door to push water away from the sill.



- **Classification of doors:**

The simplest classification is to group them as: interior and exterior doors.

Exterior doors include entry doors and garage and overhead doors (الأبواب العامة).

Entry doors in residential buildings are generally insulated and rated for energy performance.

- **Classifications based on door material:**

  Doors can be classified based on the material which they are made.

  Wood and metal (steel, stainless steel, and aluminum) are the commonly used door materials.

  Fiberglass reinforced plastic is more recently introduced material.

Wood doors are the most popular interior doors.

Among the metal doors, steel doors are used where greater security, fire resistance, rot resistance, blast resistance, and wind-load resistance are required.

Stainless steel doors are preferred for food processing plants, freezer rooms, commercial kitchens, and so on.

Aluminum doors are generally glazed and are commonly used in public buildings. Aluminum flush doors and panel doors are specified where corrosion resistance is important, such as water-treatment plants, swimming pools, and pumping stations

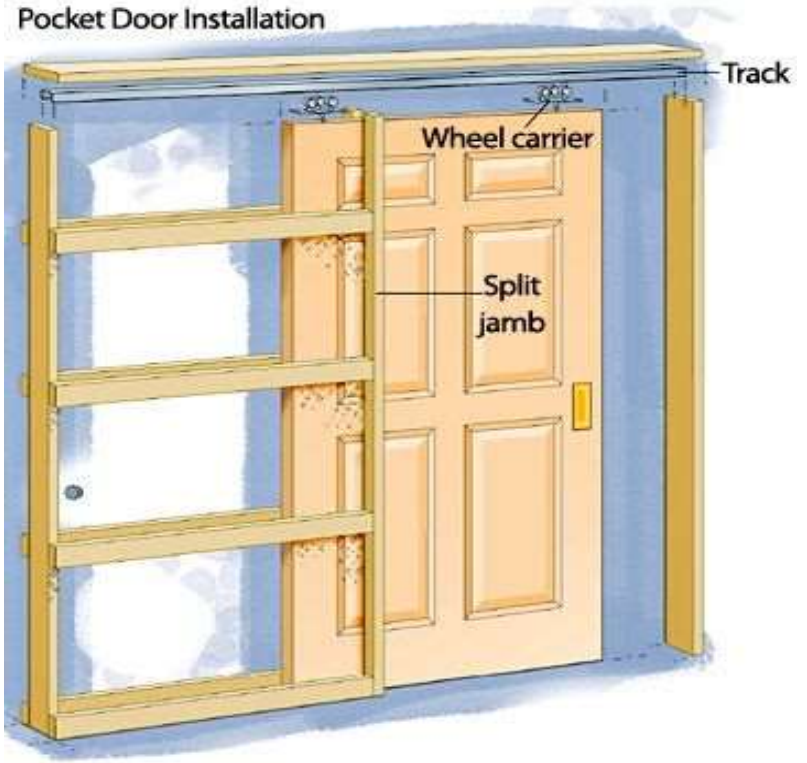
Classifications based on door operation:

- Swinging doors
- Sliding doors

A- bypass sliding doors

B- Surface sliding doors

C- Pocket Sliding doors



- folding doors يمكن طيها

- Overhead and coiling doors (ابواب اللف مثبتة علويا)

- Glass entrance doors

- Storefronts doors

- Revolving doors

- Telescopic sliding door

- Accordion doors

- **Classification based on door style**

- Ledges, braces and battens
- Frames, ledges, braces and battens
- Wood flush doors
- Panels doors

- **Door construction:**

Doors can be made of these different structural pieces:

1-Ledges, braces and battens

2-Frames, ledges, braces and battens

- **Making a ledged, braced and battened door:**

This is a very simple door for internal or external use, which is cheap to make

This door consists of these pieces:

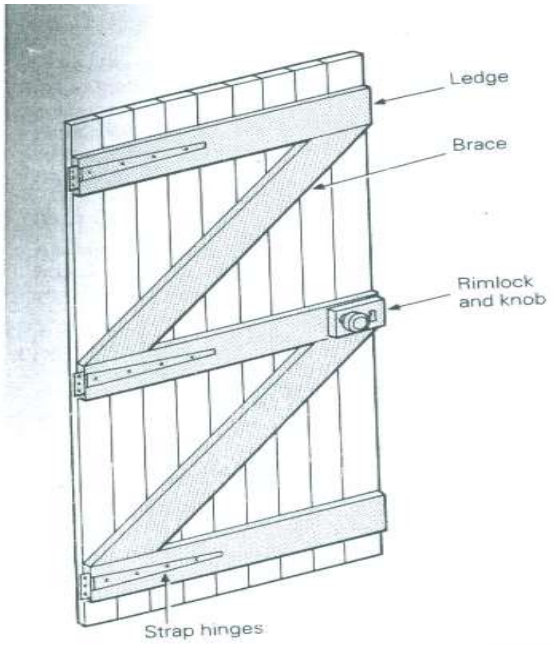
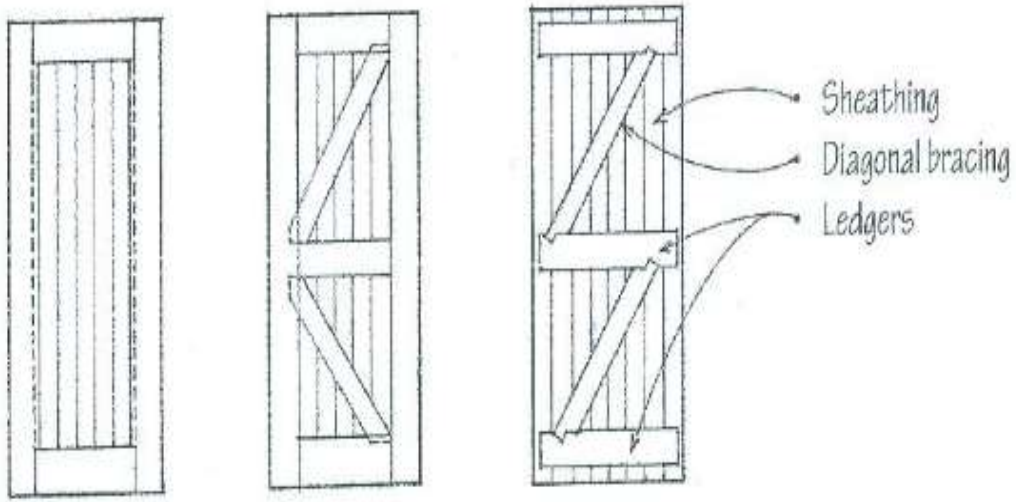


Figure 15.2 An example of a ledged, braced and battened door.

Batten doors consist of vertical board sheathing nailed at right angles to cross strips or ledgers. Diagonal bracing is nailed between and notched into the ledgers.

- Used primarily for economy in rough construction
- Usually site-fabricated
- Tongue-and-groove sheathing is recommended for weathertightness.
- Subject to expansion and contraction with changes in moisture content



CSI MasterFormat 08 14 33 Stile and Rail Wood Doors

- Tongued, grooved and V-jointed battens measuring about 100*10mm that form the surface of the door. The joints should be vertical
- Horizontal pieces called ledges measuring about 100*25mm
- Diagonal pieces called braces that measure about 100*25mm.

- **Steps to construct this type of doors:**

1-Assemble the battens so that they are right size for the door

2-Glue the tongue and grooves together

3-Screw or nail the battens to the ledges

4-Cut out and fit the braces between the ledges

5-Nail the battens to the braces

Making a framed, braced and battened door

- This door is stronger than the ledged, braced and battened door because the battens are set inside a timber frame. The framed, braced and battened door consists of these pieces:

-Battens that form the surface of the door

-A frame with a head rail ,bottom rail and two stiles

-A ledge

-Braces

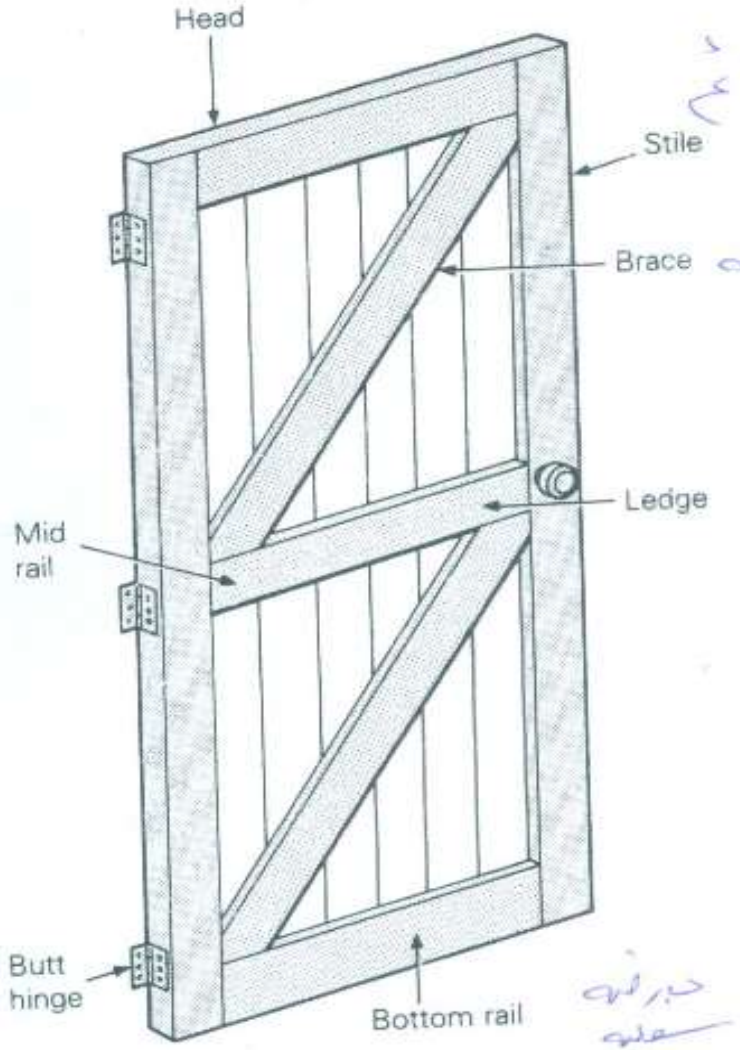


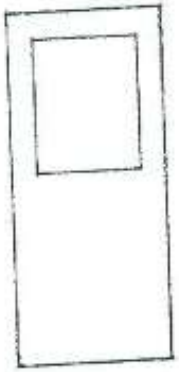
Figure 15.3 An example of a framed, braced and battened door.

Flush doors:

- Flush doors have no projections or recesses (تجاويف) on either surface of the door.
- These doors are usually made of large sheets of plywood.
- Flush doors may have glazed panels to allow in some light.

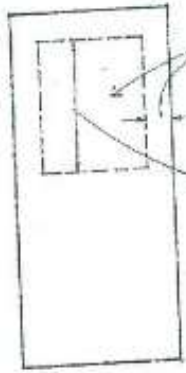
8.08 WOOD FLUSH DOORS

- Flush door



- Flush door w/ glass inserts

- Flush door w/ louvered insert



- Openings should be less than 40% of door area and no closer than 5" (125) to any edge.
- Height of openings in hollow core doors should be less than half the door height.

This list describes the parts that are specific to flush door:

- A core is the inner part of the door. The external boards or sheets of plywood are fixed to it. The core can be made from:

1-a softwood framework of horizontal and vertical pieces joined together in recessed joints.

2-a cellular center of paper or cardboard strips glued together in a lattice pattern

3-a solid centre of timber strips glued together. This type of core makes a very heavy door with good sound insulation that can be used for external doors and fire doors.

- A flush panel is 3mm plywood sheets which are fixed onto the core material.
- A lipping is a thin wood strip that protects the edges of a flush door panel
- A lock block is a piece fitted into the internal framework of the door to make the recess of the lock.

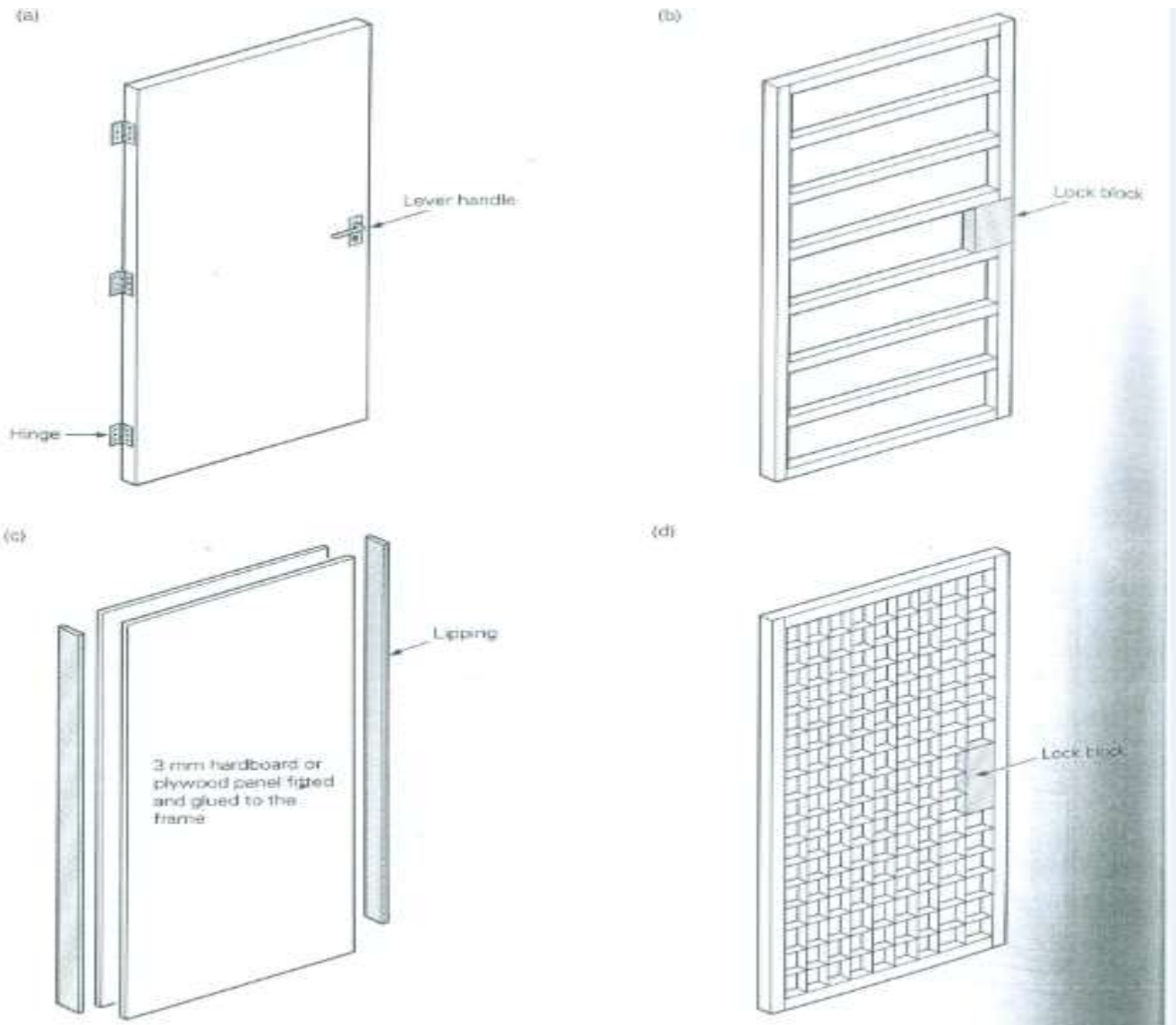


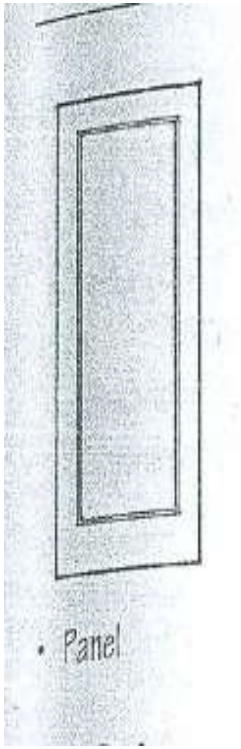
Figure 15.4 The construction of standard flush doors: (a) standard flush door; (b) a frame for a standard flush door; (c) facing and edging for a flush door; (d) an alternative core using a cardboard lattice.

- Flush doors are usually made in factories. This ensures a high-quality, durable product if the correct type of door is put in the right location. The plywood facing and frames for external flush doors should be fixed with waterproof glue.

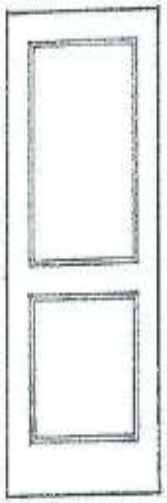
- **Panelled doors:**

Panelled doors are suitable for internal and external use.

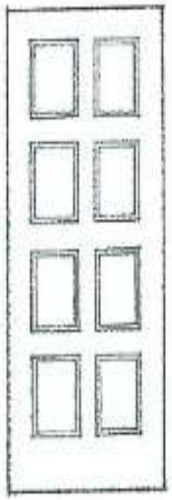
They are made from solid timber frames with solid or glazed panels.



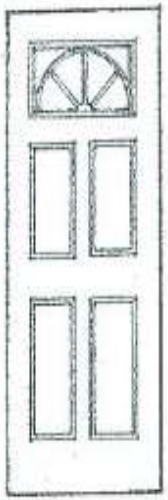
- Panel



- Panel
- Various panel designs are available

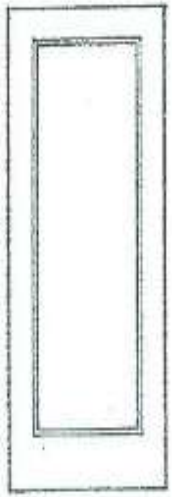


- Panel

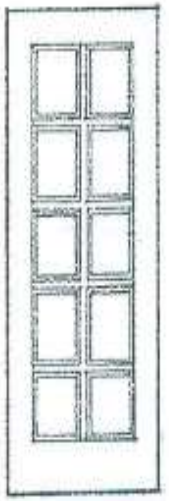


- Panel with sash

- Louvered



- French door



- French door w/ divided lights

This list describes the main parts of paneled door :

- Intermediate rails: are cross pieces that divide the door into panels horizontally.
- Muntins: are the central vertical pieces

- Bottom rail: is the bottom horizontal frame piece.
- Panels: are the filling between the framing pieces.

They can be:

- Thin, solid timber
- 6mmplywood
- Clear or obscure glass.

- The panels are usually fitted into rebates in the frames and screwed or nailed into place. This method allows you to remove and replace panels, including glass panels, easily when required.

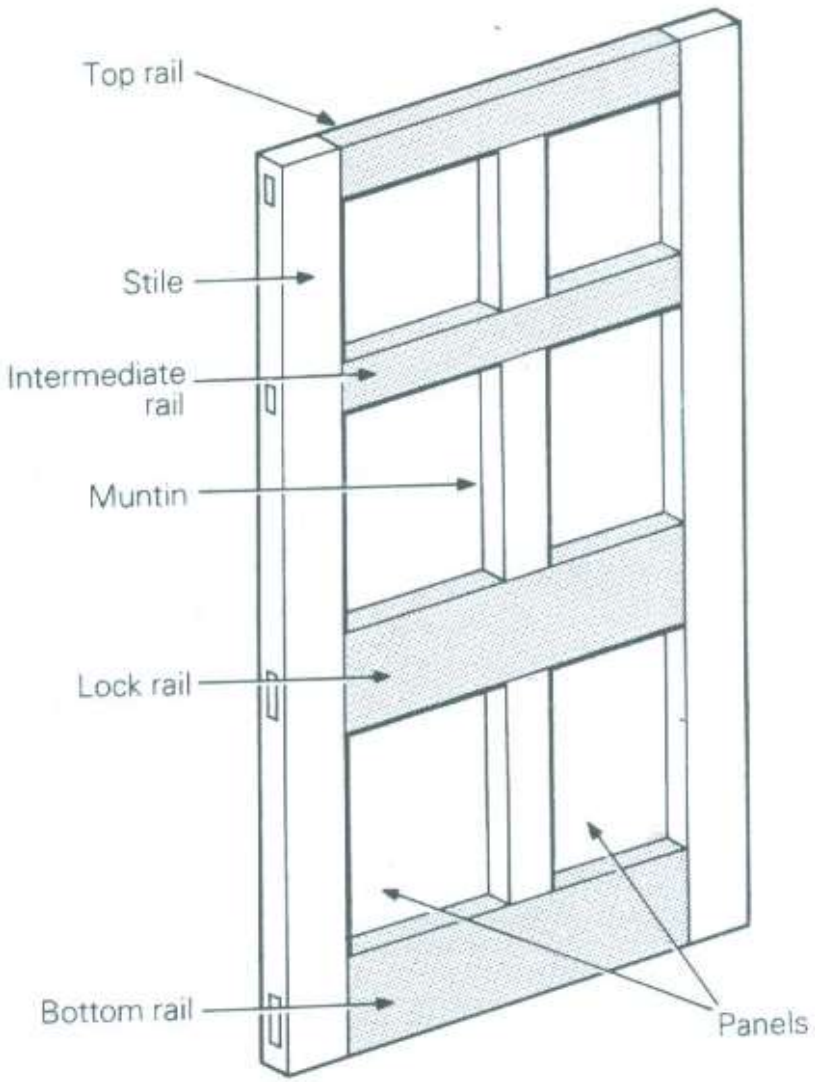


Figure 15.5 The parts of a panelled door.

شكل رقم (٦) الأبواب الحشو (اشكال تصميمية)

أبواب الحشو

تتكون من اطار من الخشب الصلب + حشوات من نفس نوع الخشب او الواح أم دي اف

الصورة للتحريك .إستخدم الأسهم
و يسار للإنتقال للسابق و التالي


أبواب الكبس
تتكون من هيكل شبكي من الخشب الصلب + غلاف من الأبلكاش
مقطع عرضي
1
2
3

CHECK YOUR UNDERSTANDING

- Doors are a means of securing access to rooms and buildings.
- Doors must resist fire and weather and provide security.
- They swing on hinges on one side and close into a frame on the other.
- Doors are usually timber.
- Door panels may be glazed.
- Flush doors are made of hardboard or plywood.
- Doors made from solid timber usually have panels.
- Solid doors can be made from tongue and groove battens on timber frames.
- Frames and linings finish off the gap between doors and walls.
- Most ironmongery is standard and manufactured to suit the various requirements for hinges and locks.

LOCATION OF DOORS

- Doors should be located in such a way that free movement in and out of the rooms of a building is ensured. Doors should be properly placed in the corner of a room.
- In case the room is to be provided with more than one door, they should be located in the opposite walls to have a good ventilation in that room