CHAPTER 15

WINDOWS AND DOORS

Windows

- Give light to internal space
- Allow rapid ventilation (now called purge ventilation)
- Provide emergency escape

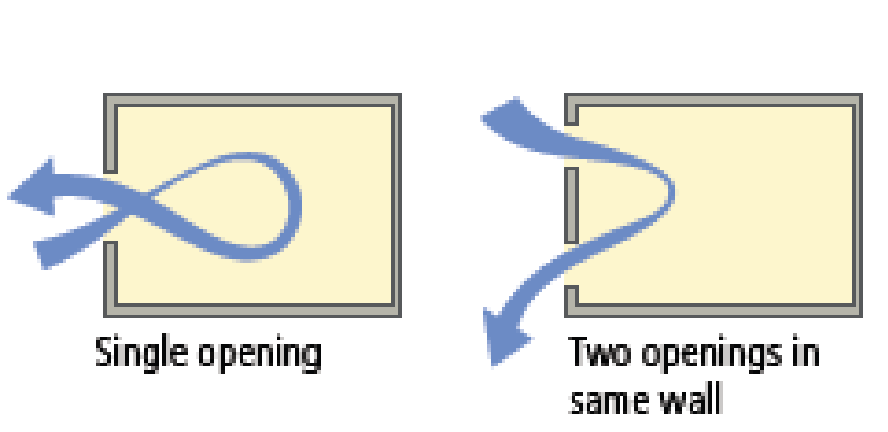
Light

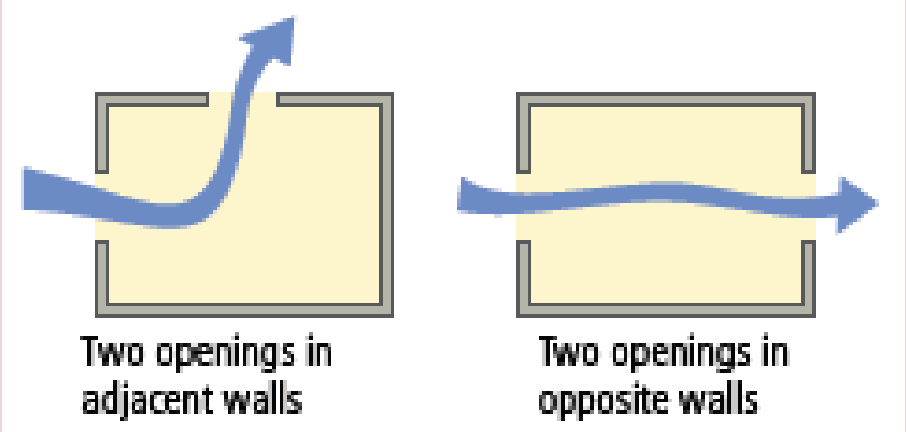
- Window should be at least 10% of floor area to provide adequate light and ventilation.
- High use and south-facing rooms require larger glazing.

Ventilation

Two types of ventilation

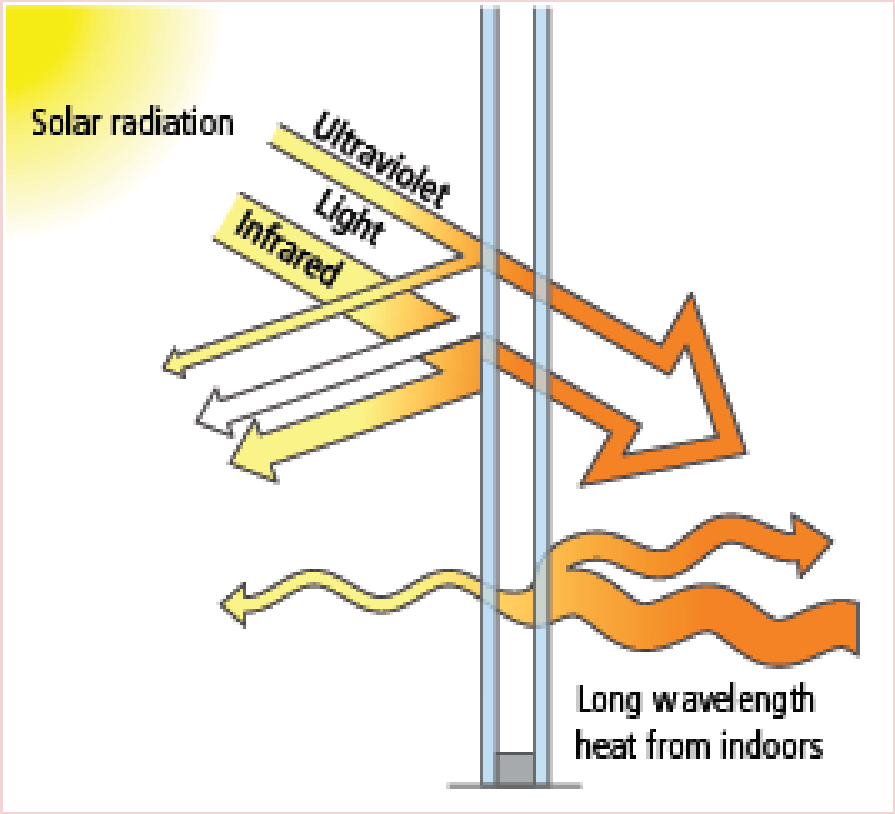
- Purge ventilation (rapid ventilation)
- Background ventilation (permanent state of ventilation)





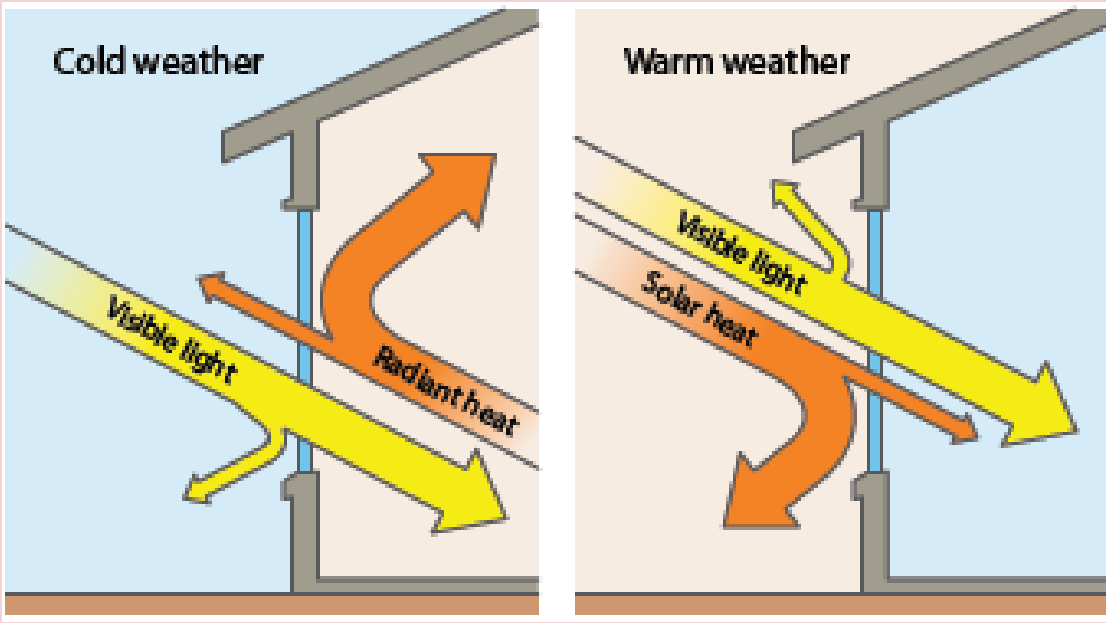
Preventing Excessive Heat Loss

- 20% of total heat loss can be through windows.
- Thermal bridging in windows is reduced through additional panels of glazing.
- Gas can fill the void to reduce heat transmission.



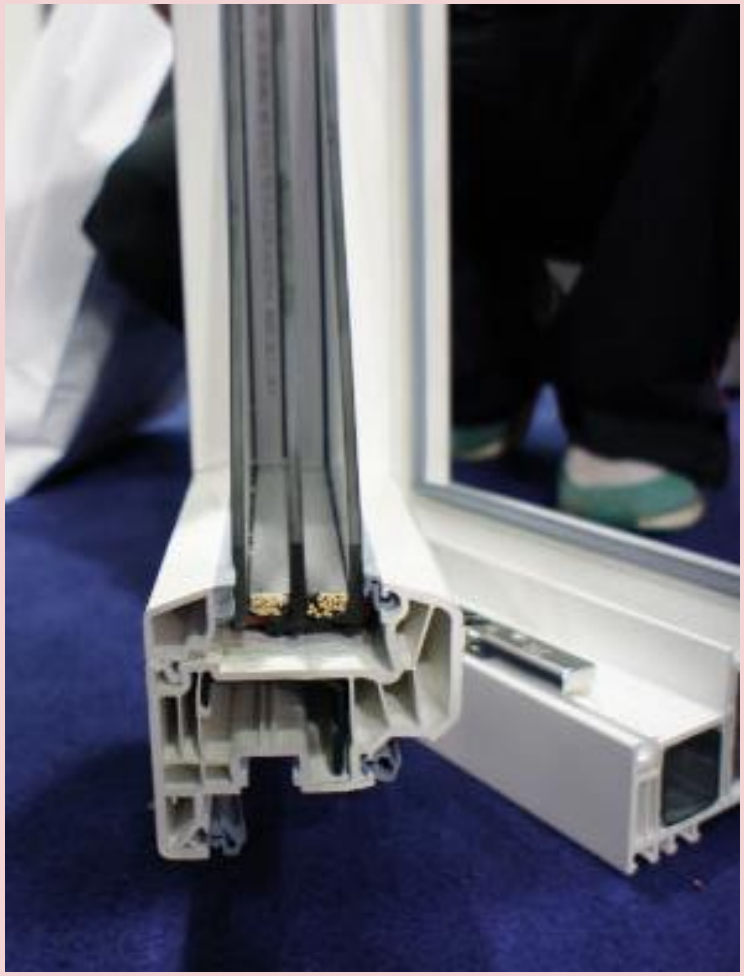
Preventing Excessive Heat Loss

- Low E glazing has a special metal coating on the inner pane of the glass.
- Window frame materials also have an effect on the conduction of heat.



Glare & Solar Heat Gain

- The orientation and size of the windows should be considered during the design stage of the building.
- Glare can cause visual discomfort. This can be prevented using blinds or other such methods.



Additional Characteristics

- Security: Most uPVC windows have locked ventilation options for greater security.
- Emergency escape: In the event of an emergency, windows can be used as a means of escape.

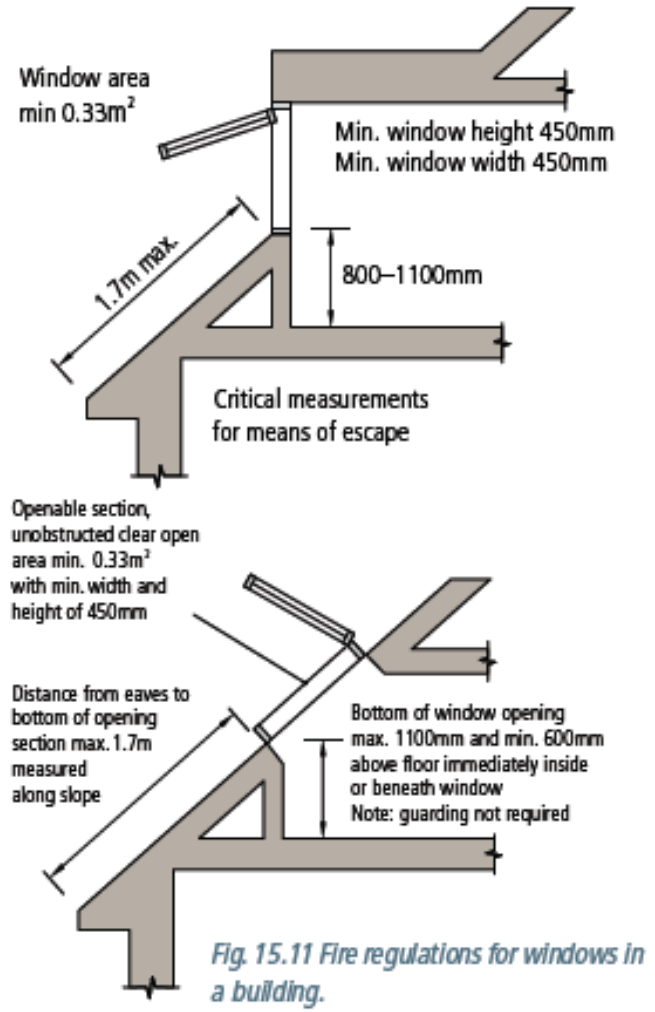
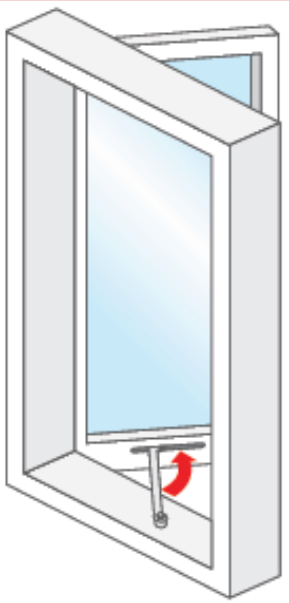
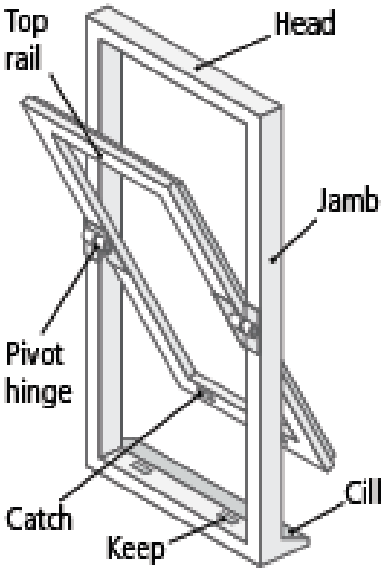


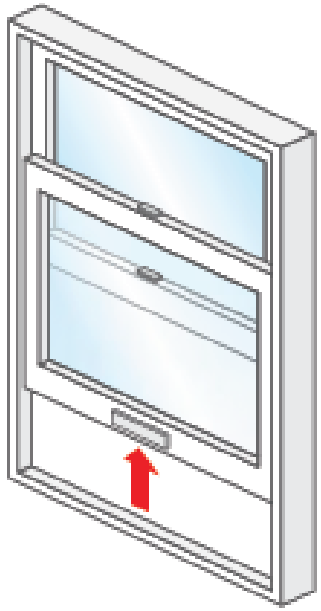
Fig. 15.11 Fire regulations for windows in a building.

Types of Window

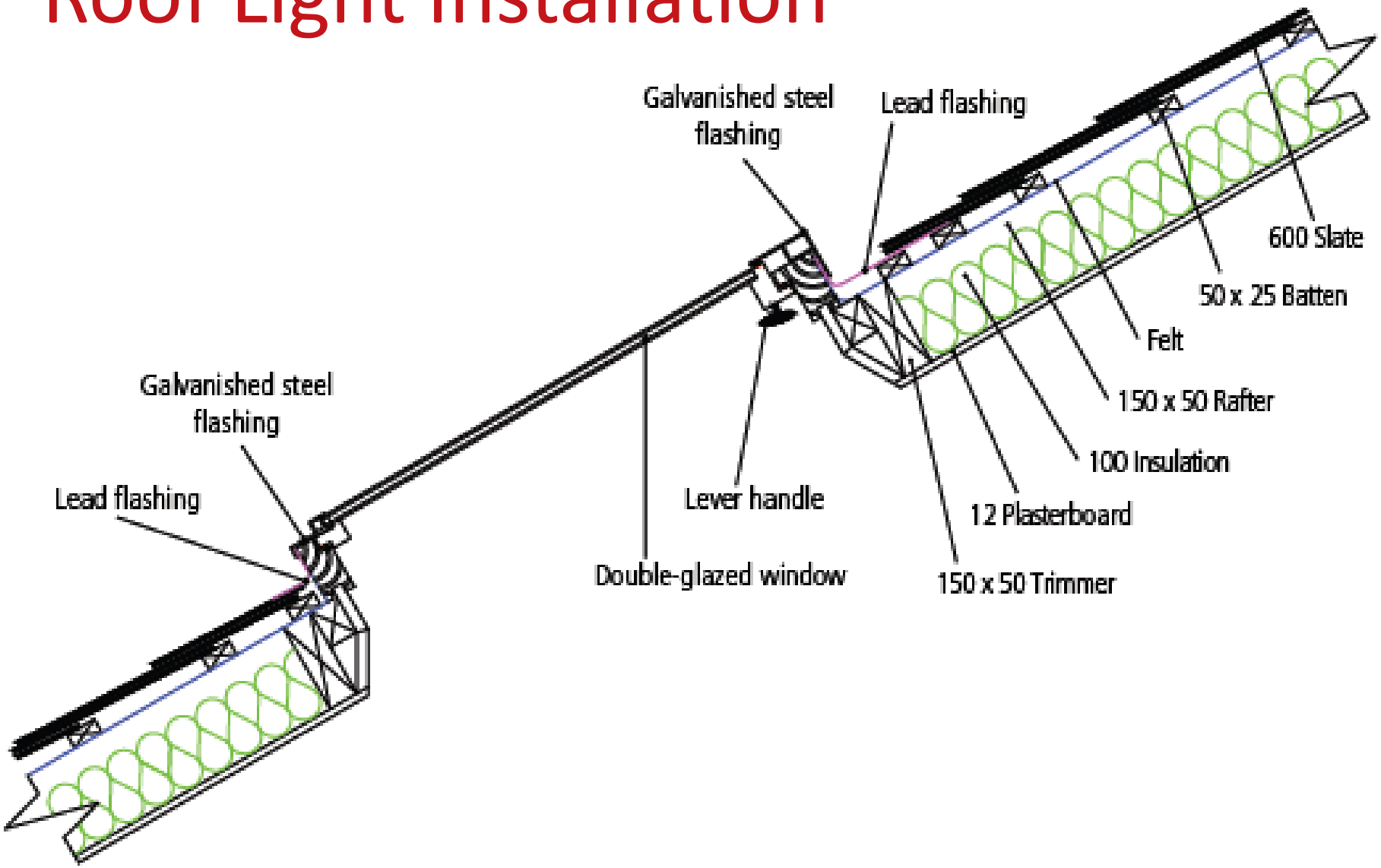
- Casement: Window opens within a frame.
- Pivot: Window revolves open around an pivot point, much like a roof light.
- Sliding sash: Window is made up of two panels which can move up and down.



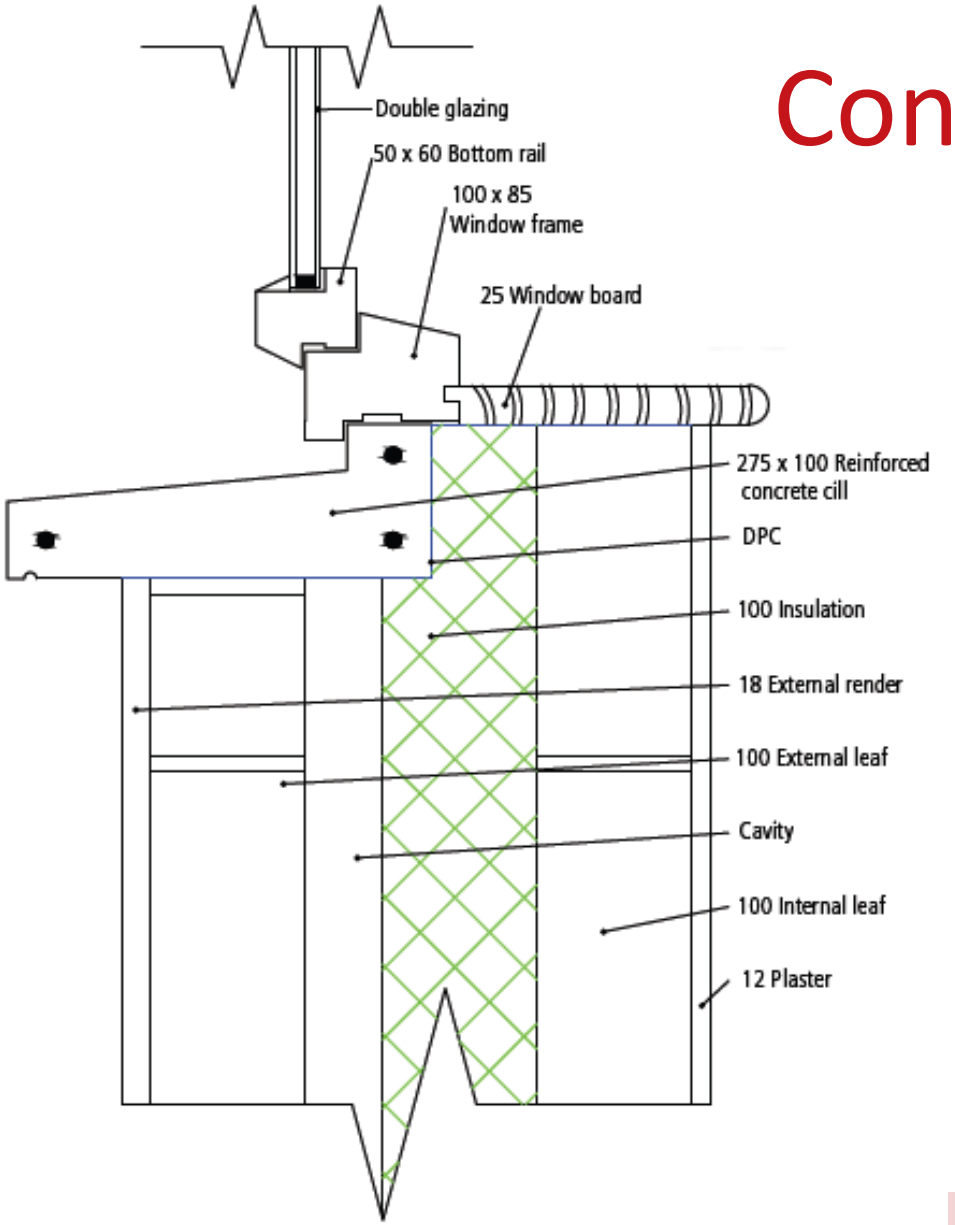


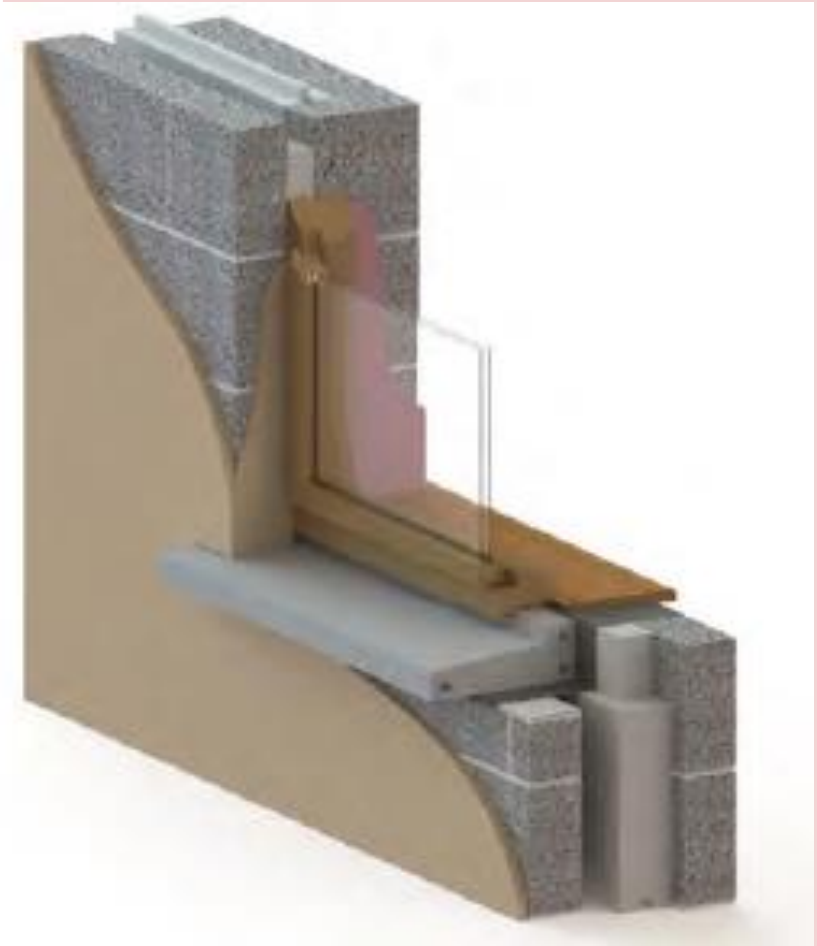


Roof Light Installation

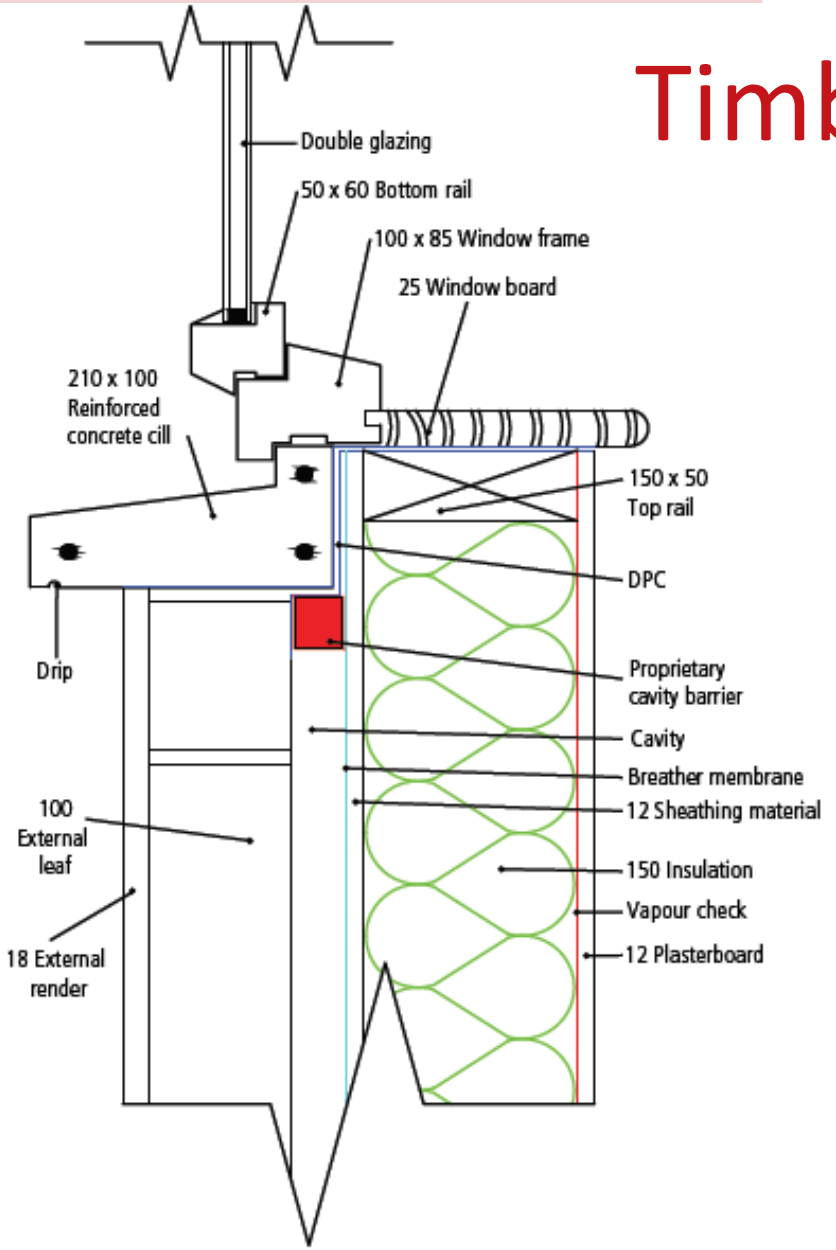


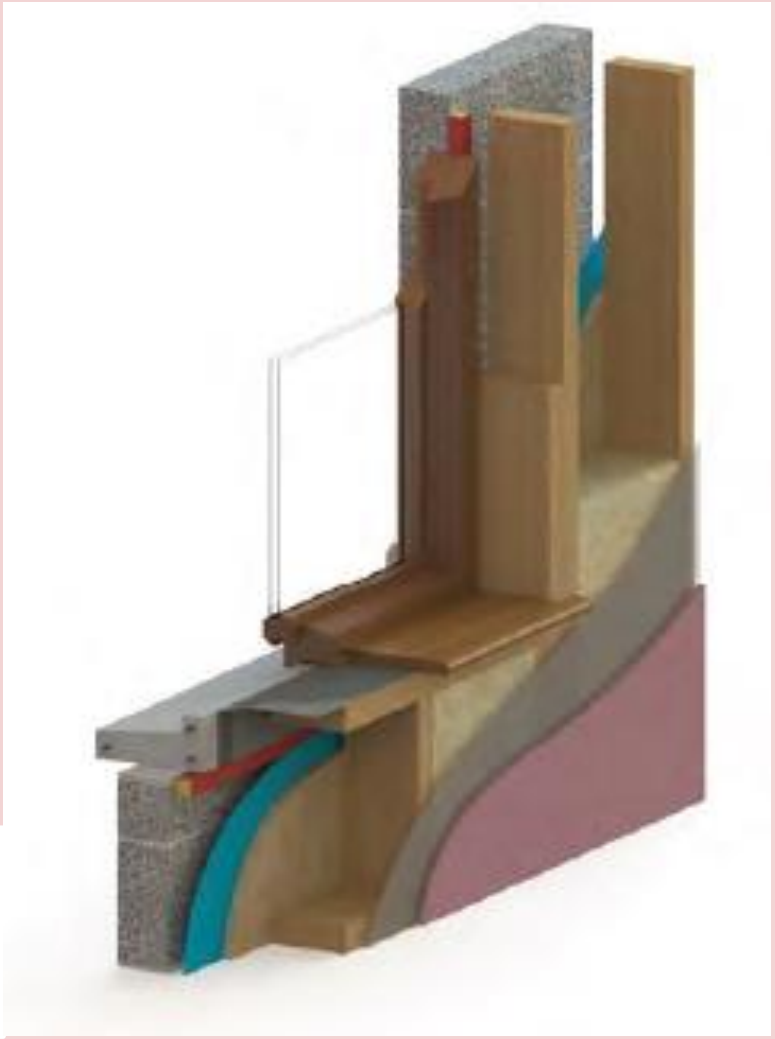
Concrete Cavity Cill



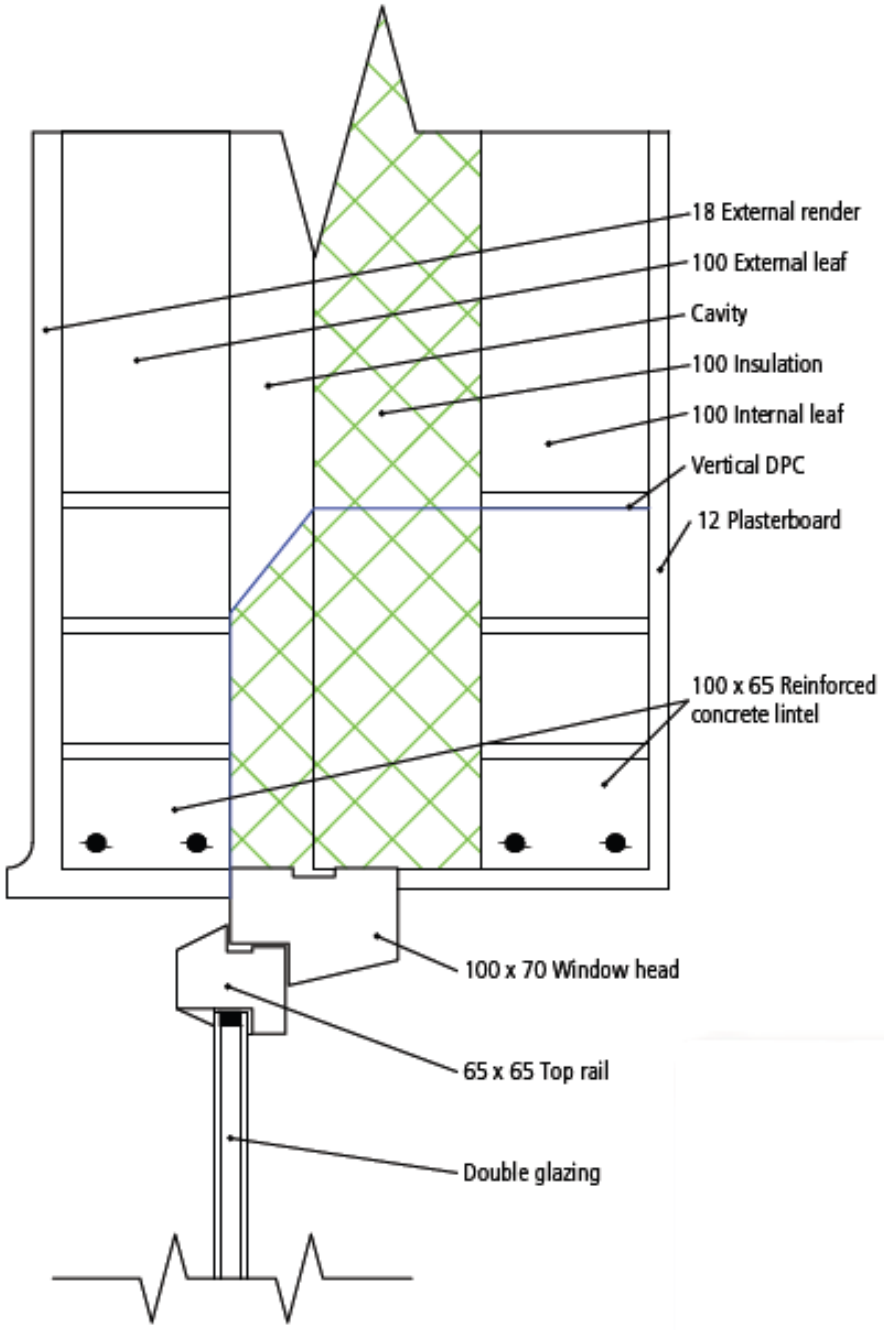


Timber Frame Cill

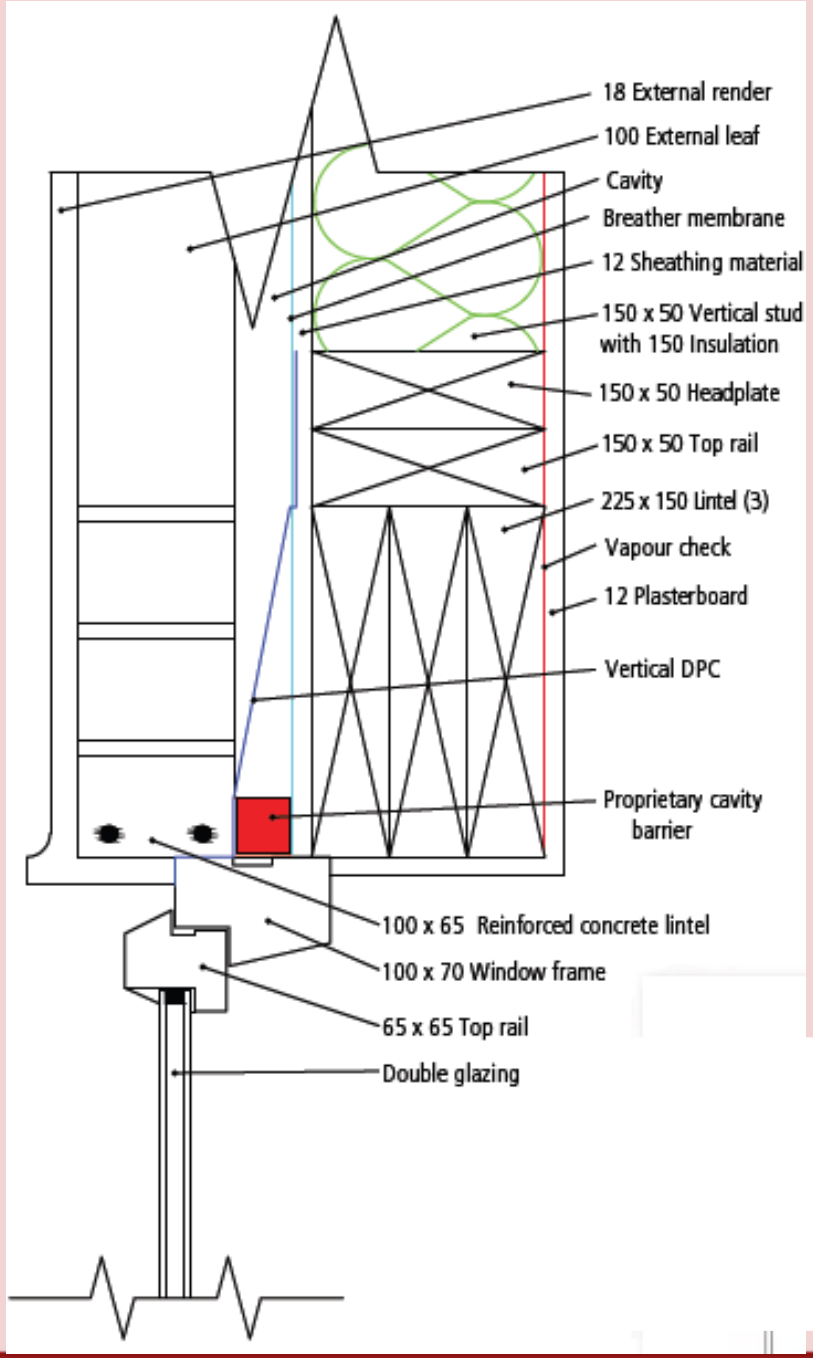


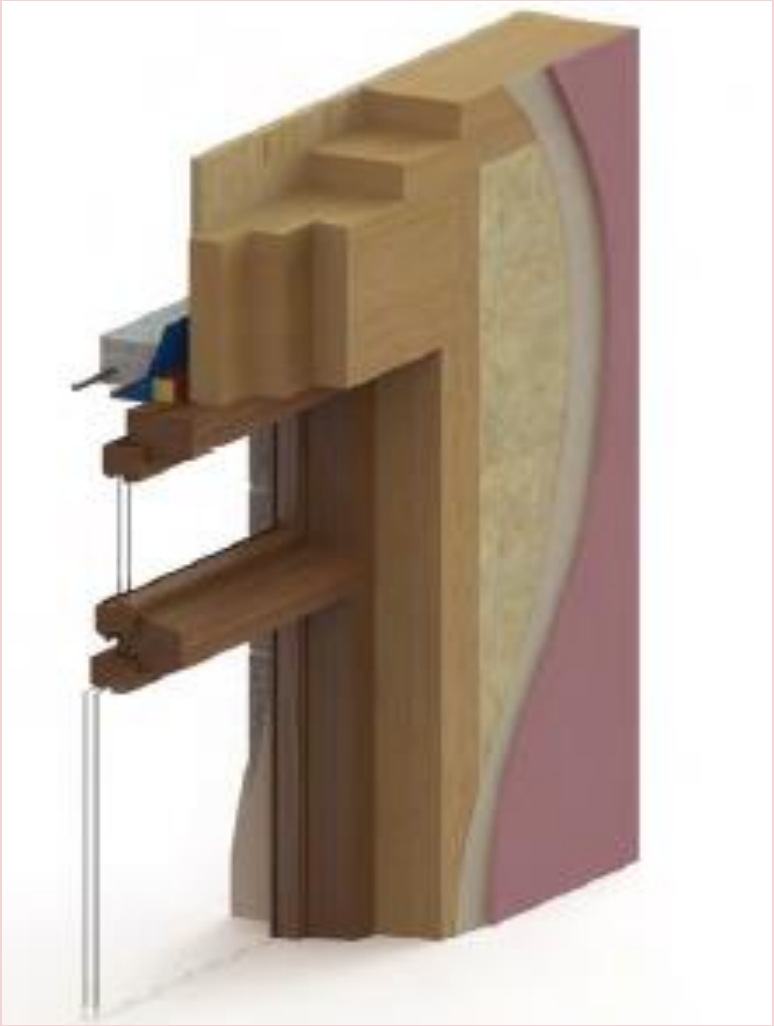


Concrete Cavity: Window Head



Timber Frame: Window Head



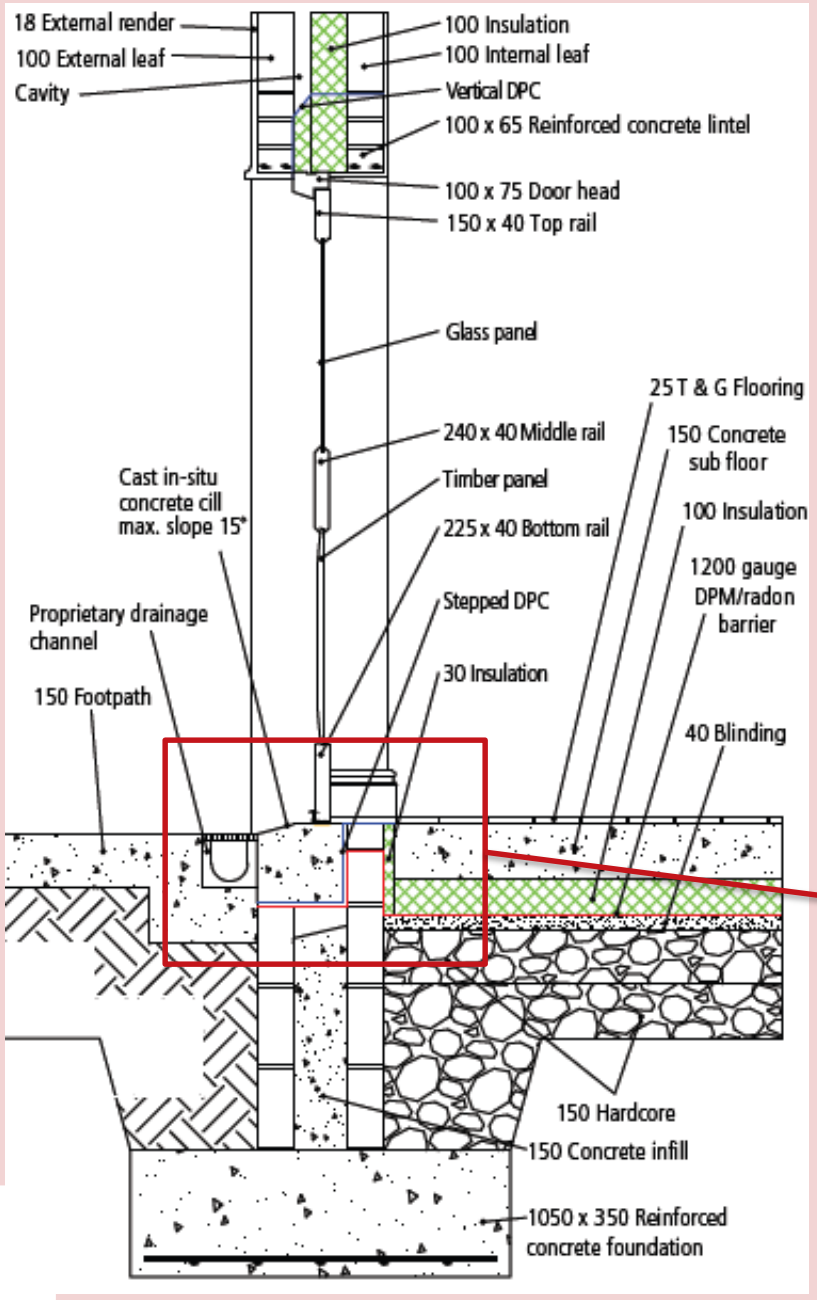


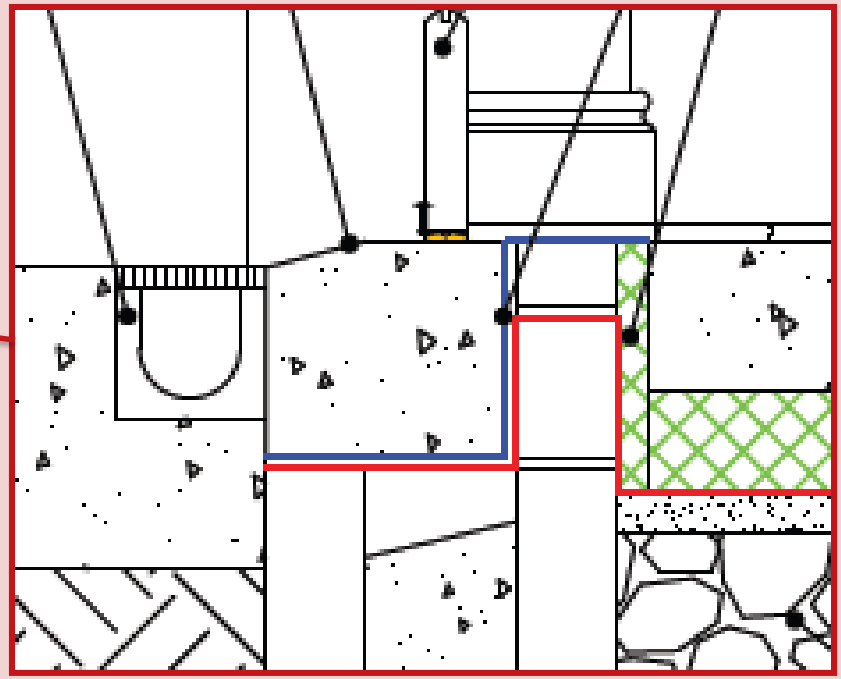
Doors

- Weather-proofed access
  - Prevent wind and rain
- Available in various materials
  - Timber
  - Metal
  - uPVC
- Can affect the overall appearance of a building

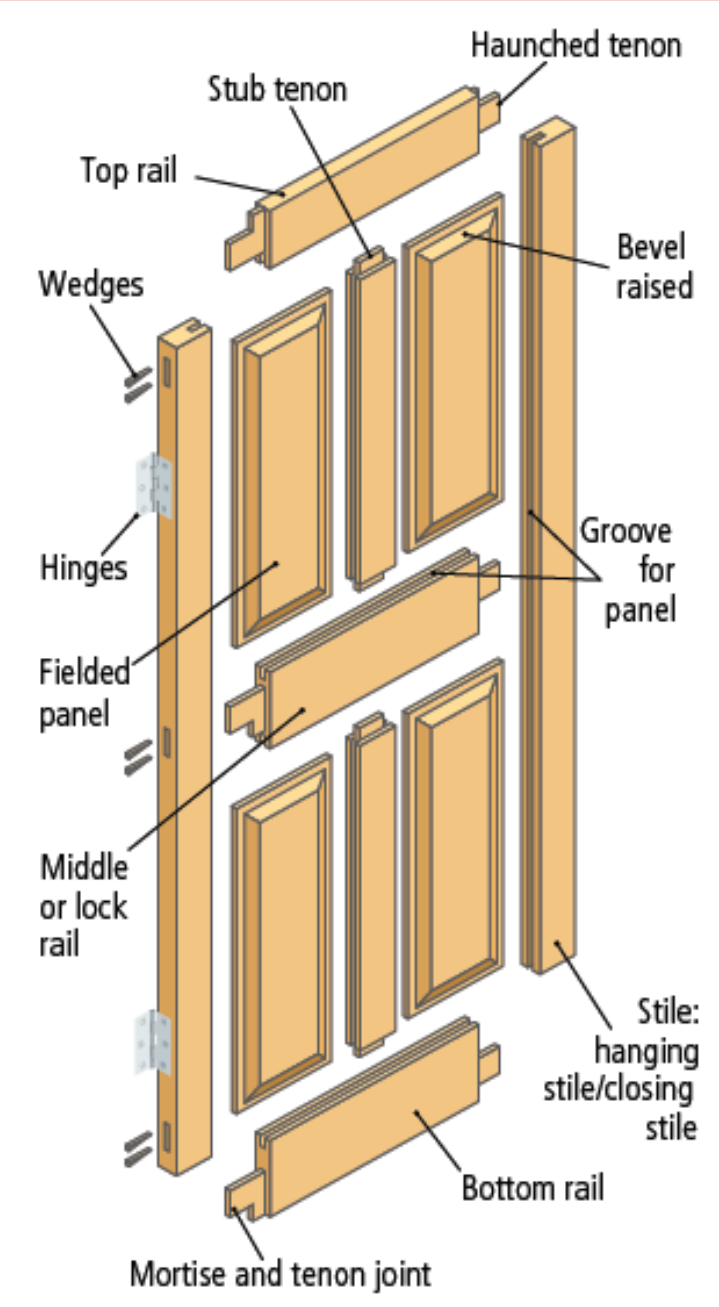
Front Door Detail

Note the proprietary drainage channel at the front of the door.

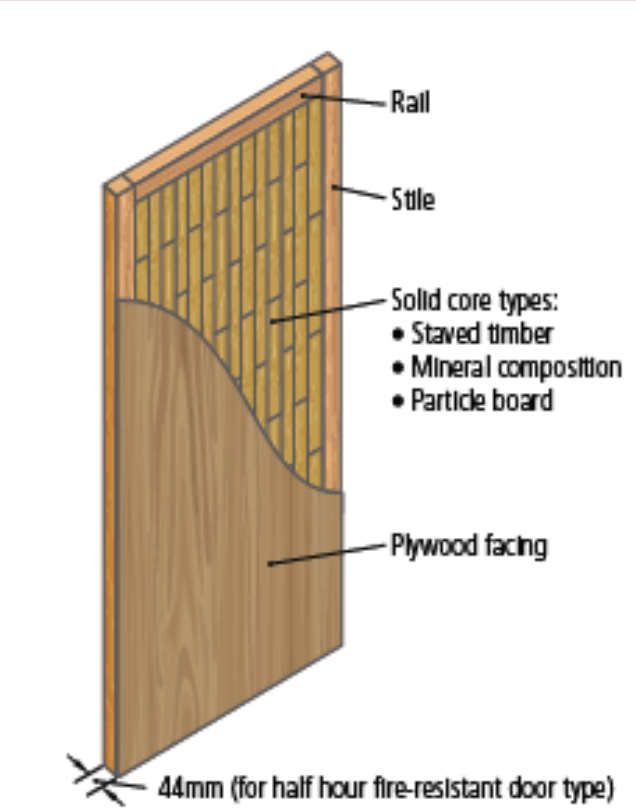




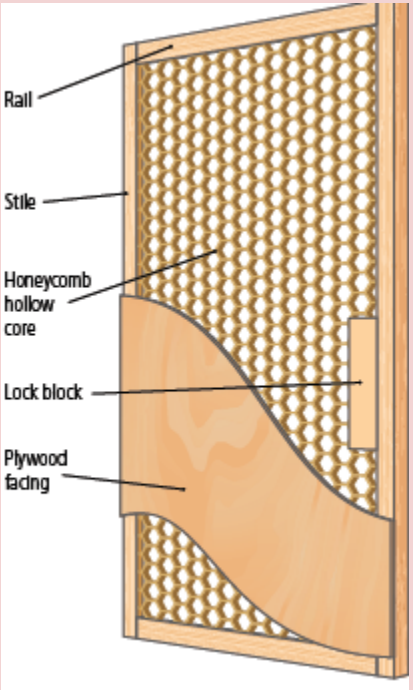
Panelled Door Assembly



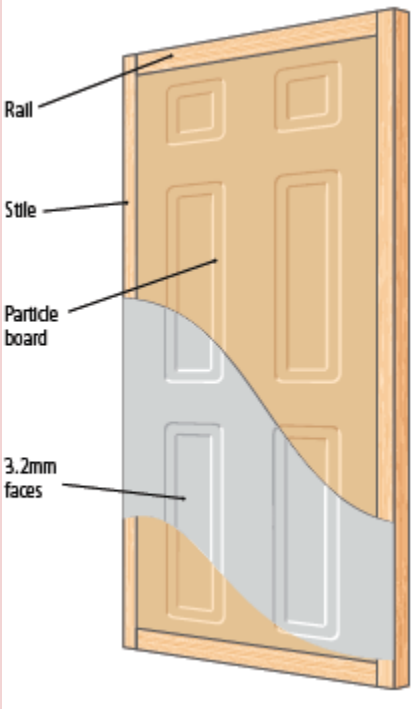
Panel Door Section



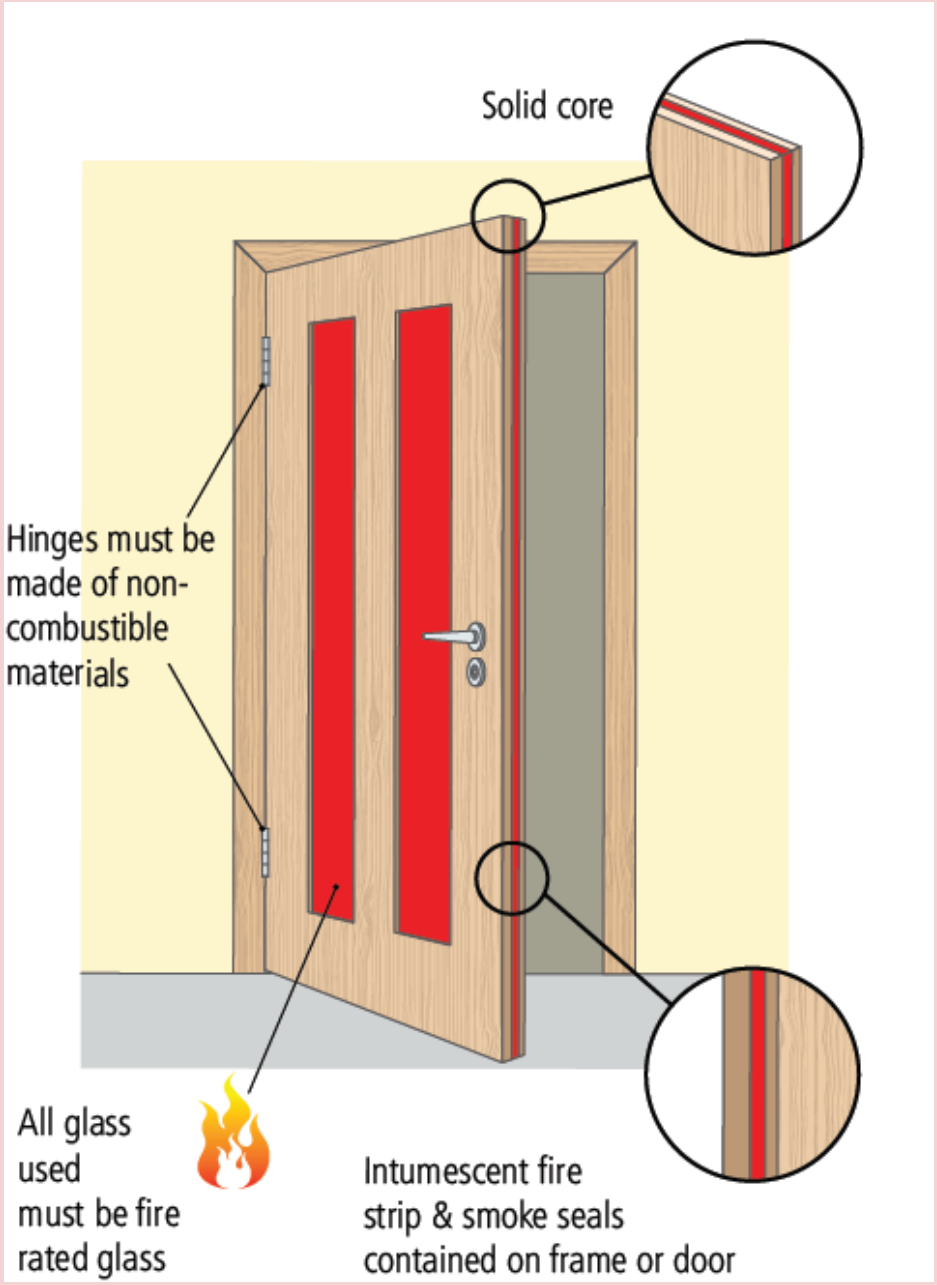
Solid Core Door



Hollow Core Door



Hardboard Flush Door



Fire Door

- Classified by how long the door will provide protection from fire
- Materials used:
  - Gypsum
  - Steel
  - Fire-retardant particle board
  - Fibre glass
  - Timber

Door Frame Construction

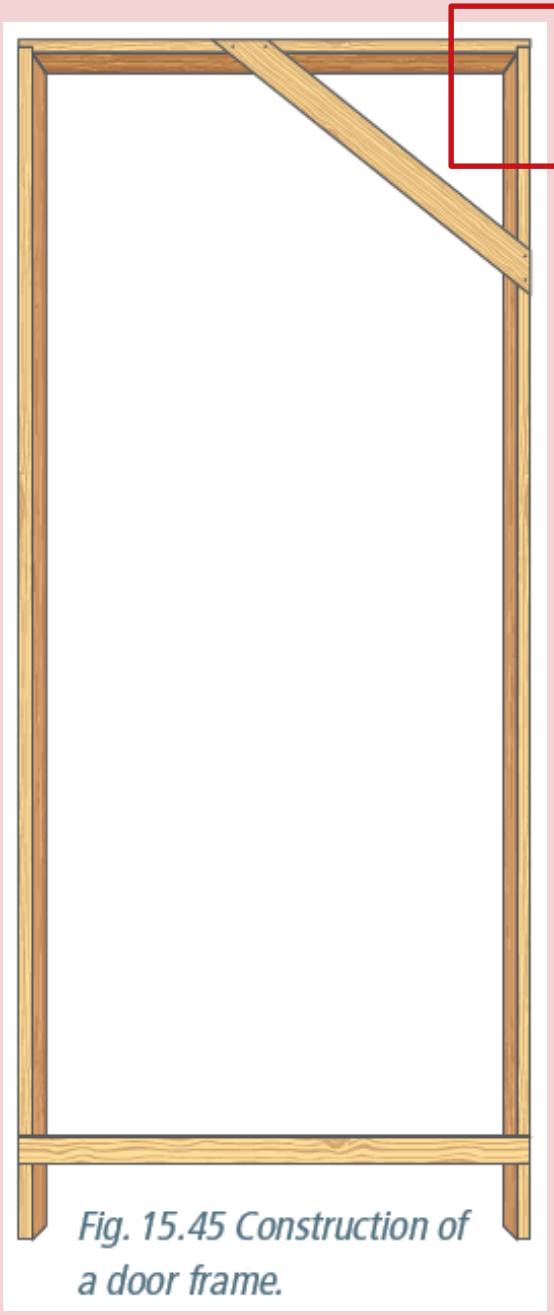
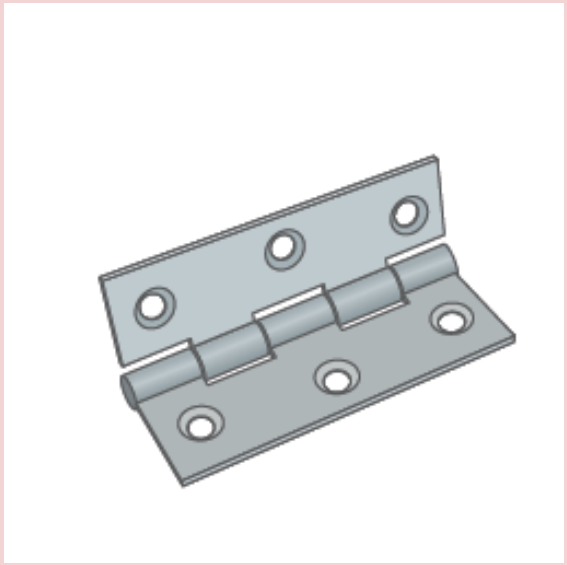


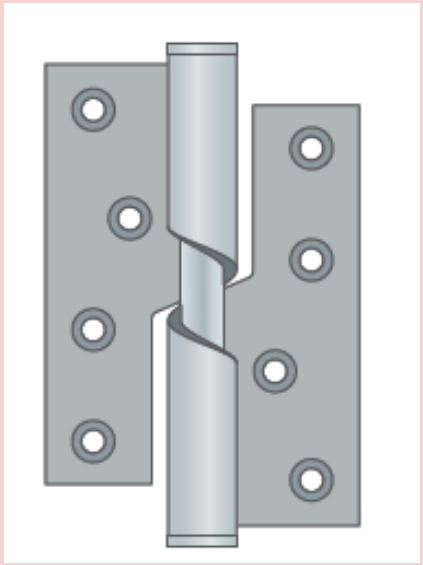
Fig. 15.45 Construction of a door frame.

Rebated Joint

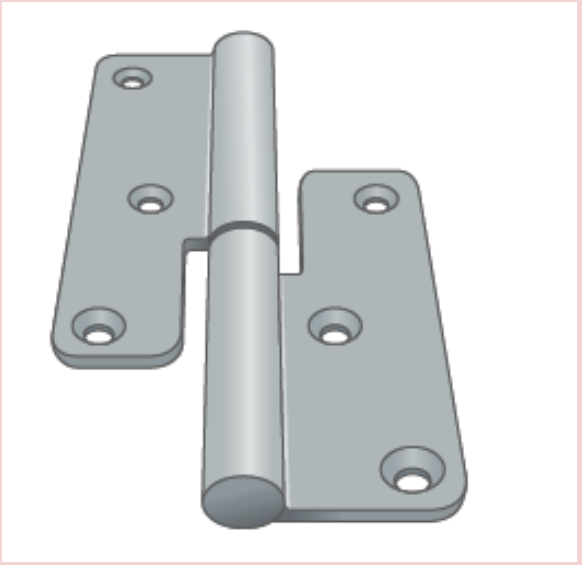
Hinge Types



Butt Hinge



Rising Butt Hinge



Lift-off Hinge