THEORY AND ACTIVITIES MODULE 5

(5th week)

CONTENTS:

5.1. INTRODUCTION
5.2. FLOORS AND TYPES OF FLOORS
- 5.2.1. Solid floor
- 5.2.2. Floating floor
- 5.2.3. Raised floor
- 5.2.4. Ribbed floor
- 5.2.5. Suspended floor

5.3. FLOORING SYSTEMS
5.4. ROOFS AND TYPES OF ROOFS
- 5.4.1. Flat roof
- 5.4.2. Pitched roof
- 5.4.3. Gable roof
- 5.4.4. Hipped roof
- 5.5.5. Shed roof

5.5. ROOF COMPONENTS
5.6. SERVICES AND FITTINGS
- 5.6.1. Services
- 5.6.2. Fittings

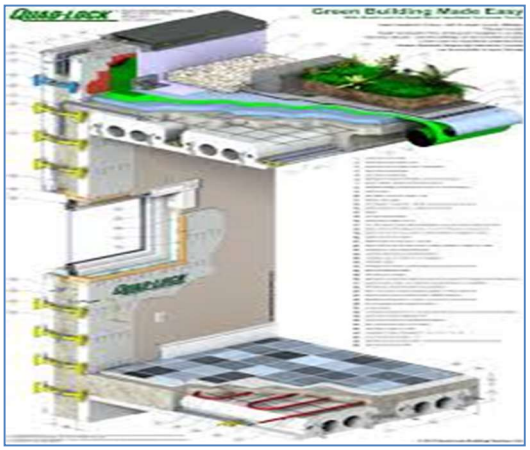
ACTIVITIES

A. Read the text bellow once to get the general meaning

B. Read the whole text again out loud, checking the audio of the terms. Repeat the text (or chunks of texts) when you find yourself stumbling over words. Do it several times until you can read it fluently.

5.1. INTRODUCTION

This module covers terms related to floors, flooring systems, and the most common types of floors. It also includes roofs, types of roofs, and roof components as well as services and fittings in a building.



5.2. FLOORS AND TYPES OF FLOORS

Floor is a polysemic term with two meanings in construction:

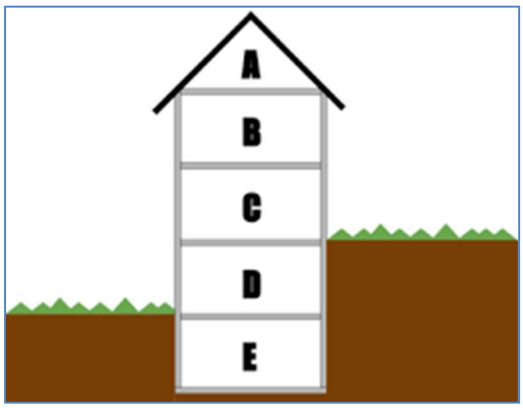
(a) Regarding a room, it is the base surface upon which one may walk or stand.

(b) When we speak of the different levels of a building, we can say that the floor is a division between one floor of a building and another. It can also be called **story** or **level**.

A floor typically provides structural support for the contents of the room, its occupants, and the weight of the floor itself. It also offers resistance to the passage of moisture (wetness), heat and sound.

Floors can have different types of finish which may contribute to the look and acoustics of a space. Have a look at the illustrations below for (a) floor, and for (b) floor-level-story.

floor



floor - level - story

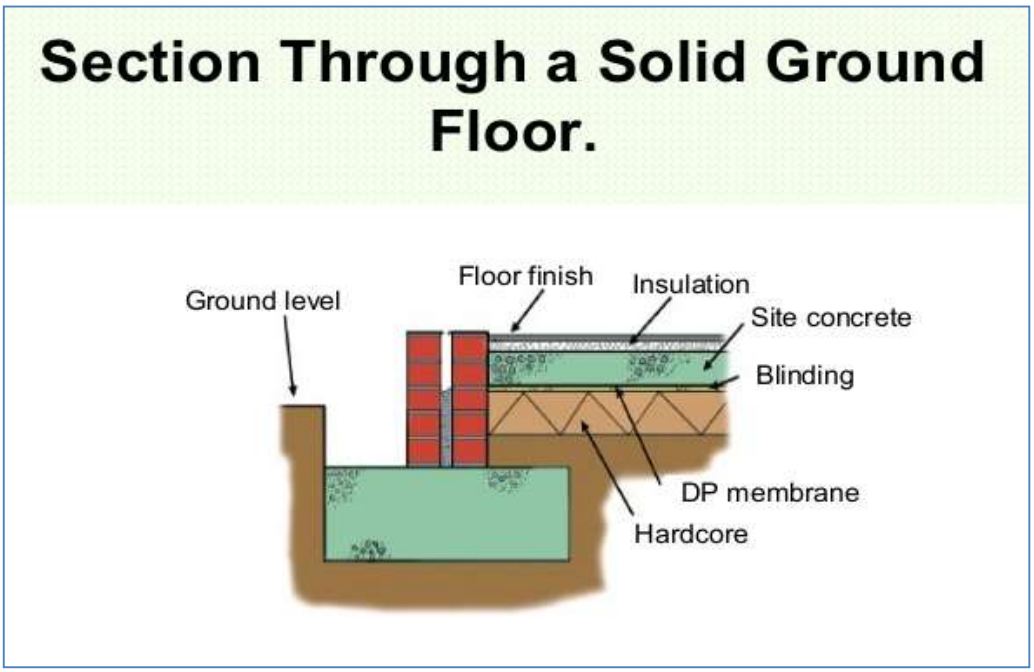
TYPES OF FLOORS

Most floor constructions are either **solid floors**, built up from the ground, or **suspended floors**, supported by wall structures. There are many variations against the basic types, we will explore the most common ones.

5.2.1. Solid ground floor

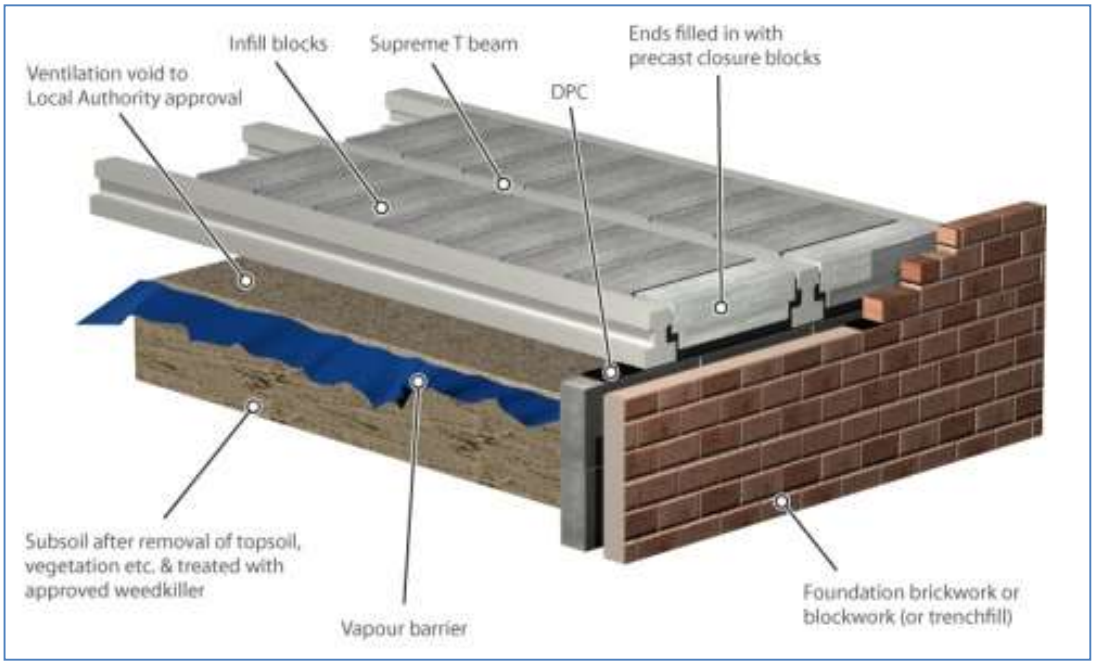
It is built up of:

- a sub-base of a **stone-based material,**
- a **hardcore** of a filling material to make a solid base,
- a **damp-proof membrane,**
- a **concrete bed,**
- a **screed** (levelling device) usually of sand,
- a cement mix to prepare the installation of a floor covering and
- the **finish,** such as **carpet, hardwood, terrazzo**, **floor tile**, etc.



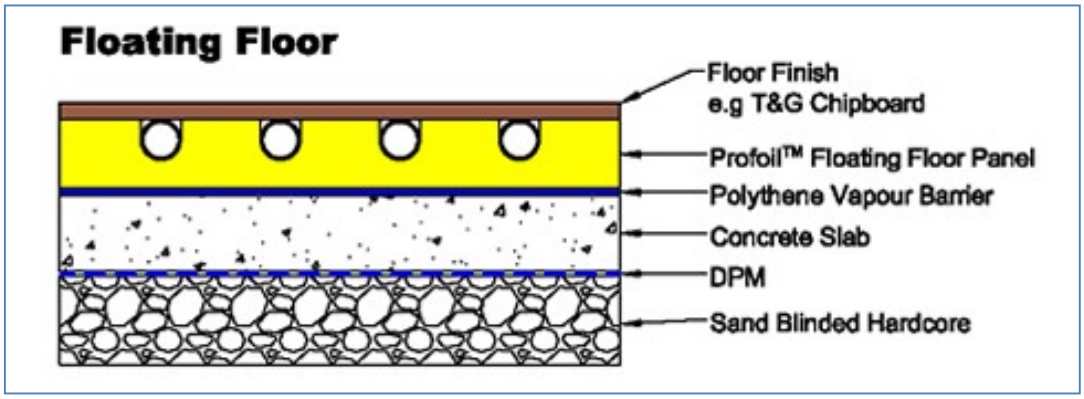
5.2.2. Suspended floor

A floor which **spans** the entire distance between end supports without additional support in the middle. It is supported clear of the ground, usually on wall or columns.



5.2.3. Floating floor

A **floor assembly** completely separated from the structural floor by a **fiberglass floor-isolation board** used to improve the **thermal and acoustic insolation**. Its advantage is to reduce transmission of impact noise downwards through a separating floor.



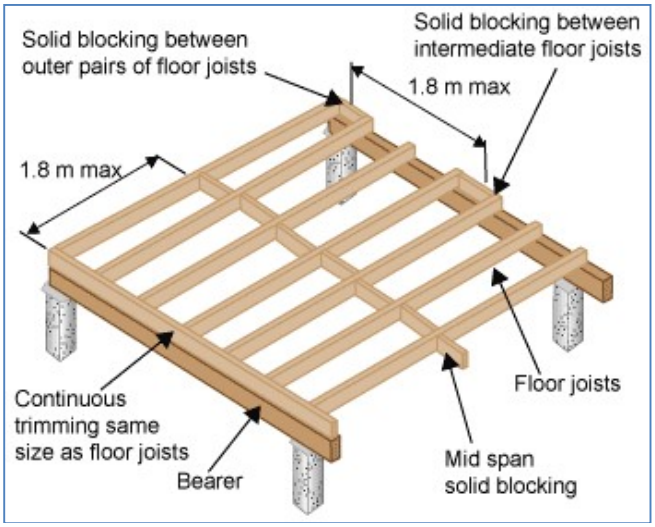
5.2.4. Raised floor

A floor fabricated of square plates that rest on the **interlocked pedestal** attached to the structural floor. It is above a solid **floor slab** leaving an open **void** (empty space) which can be used to distribute building services, for example in offices. The floor slab is the **structural slab** serving as a floor usually of **reinforced concrete**.

5.3. FLOORING SYSTEMS

A flooring system is the entire system of components that makes up a floor, including **joists,** subfloor, **finish floor**, etc. When constructing the floor system it is important to take into consideration the type of flooring, the laying of pipes and reinforcement. The type of flooring in a house must be adequately supported by the flooring structure below.

- **Joists** are any of a series of small parallel beams for supporting floors, ceiling or flat roofs.

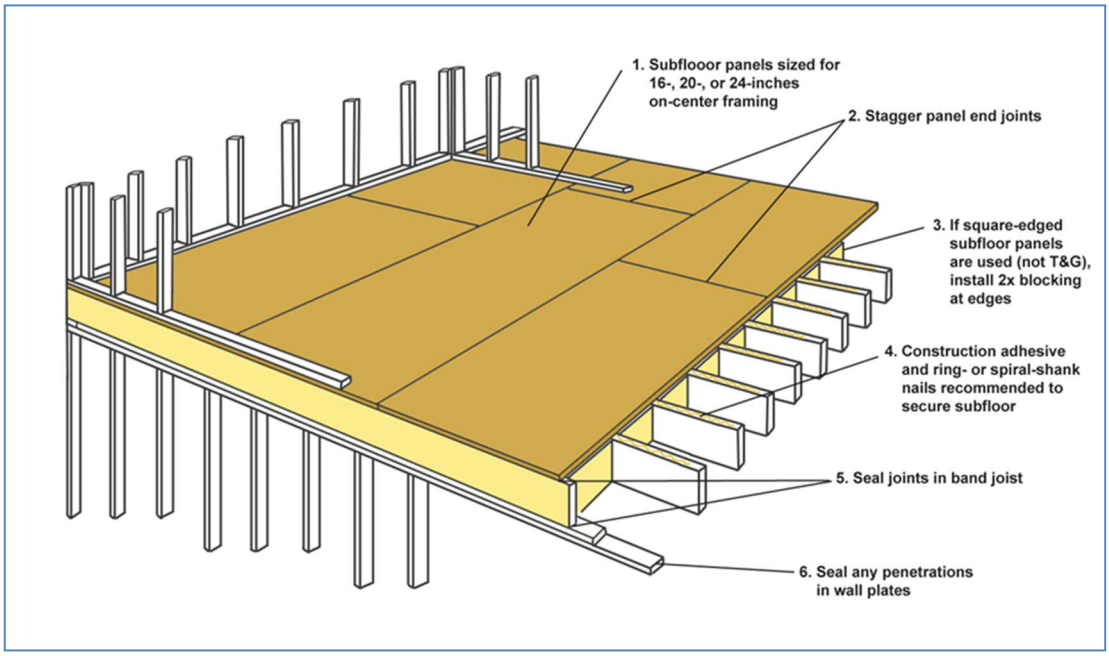


- The **finish floor** is the wearing surface of a floor, usually laid over a subfloor. It can be also called **finished floor.**

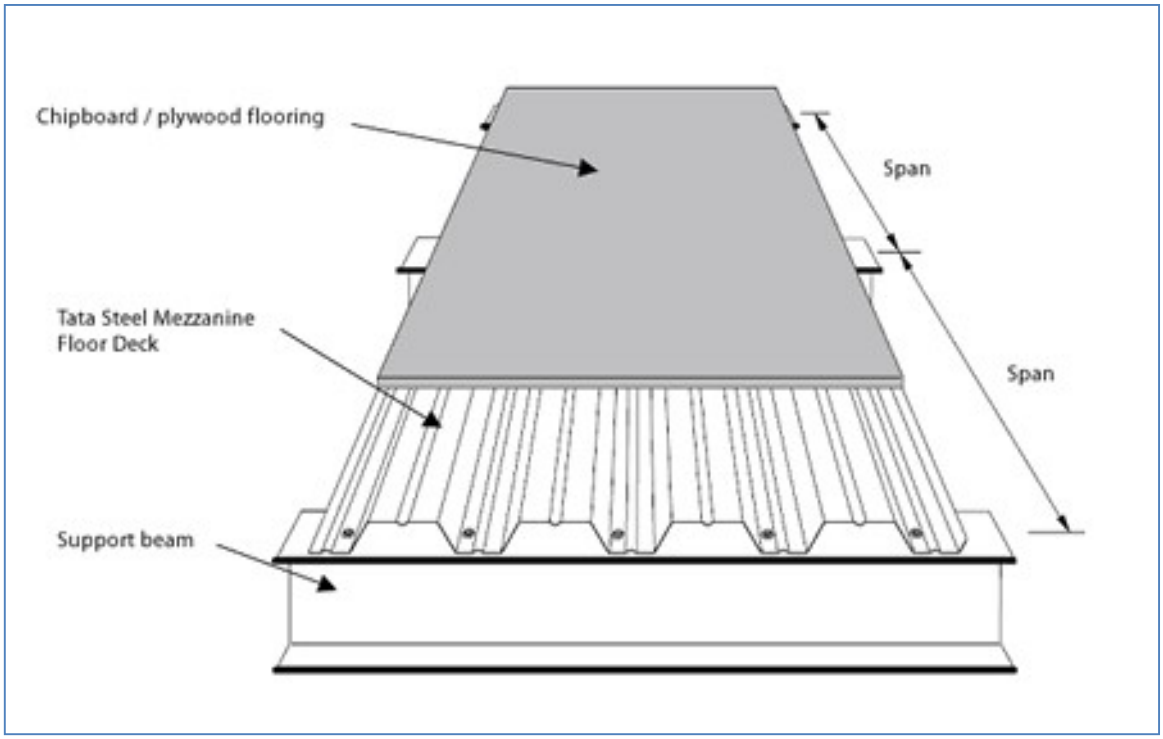
hardwood finished floor

Finished floors can also be made of the following materials:

- The **subfloor** is the base of a finish floor consisting of boards, **plywood**, or other sheeting laid over and fixed to the floor joists. It is also called **blind floor** or **rough floor**.



- The structural surface to which flooring or roofing is applied is called **deck**. See picture below:



5.4. ROOFS AND TYPES OF ROOFS

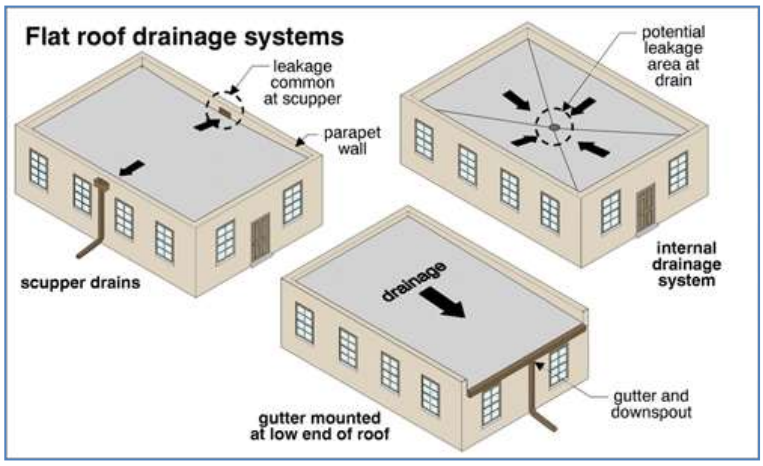
Roofs are the external top covering of a building, including all the materials and constructions necessary for supporting the roofing. It provides protection against rain, snow, sunlight, and wind.

TYPES OF ROOFS

5.4.1. Flat roof

A **flat roof** is a roof having a slight slope so as to drain rain water

.

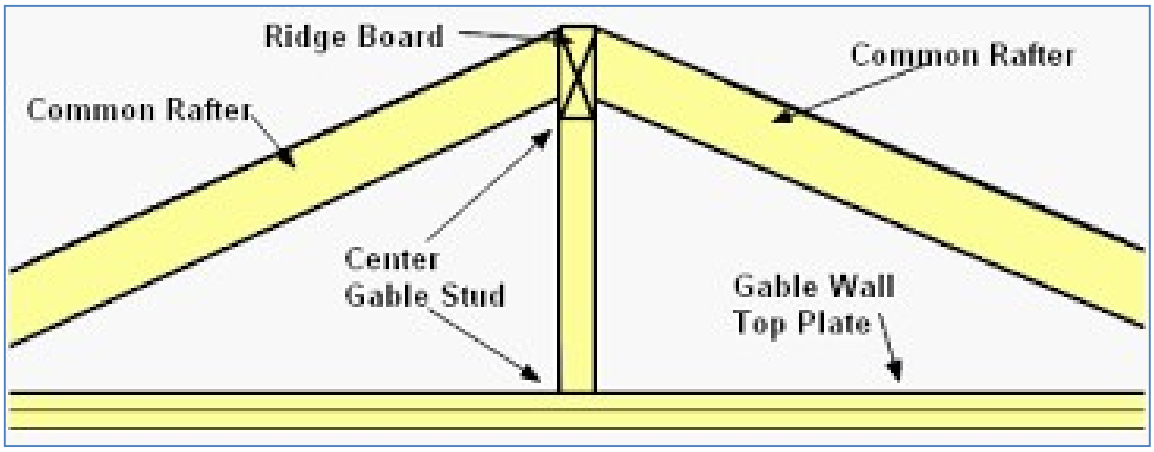


5.4.2. Pitched roof

A **pitched roof** is a roof having one or more slopes.

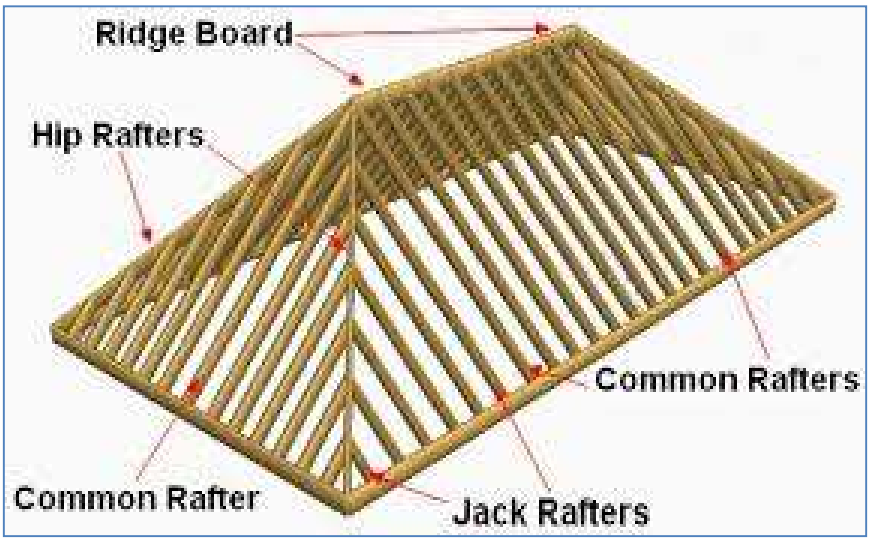
5.4.2.1. Gable roof

A pitched roof that terminates at one or both ends is a **gable.**



5.4.2.2. Hipped roof

A pitched roof with **hipped ends,** also called **hip roof**.



5.4.2.3 Shed roof

A **shed roof** is a pitched roof having a single slope.

5.5. ROOF COMPONENTS

The top of the roof is the **roof covering** with all the materials laid on the roof frame, which includes sheathing (covering), the outer cladding materials, etc.

Have a look at all the other parts of a roof paying attention to the most common ones such as:

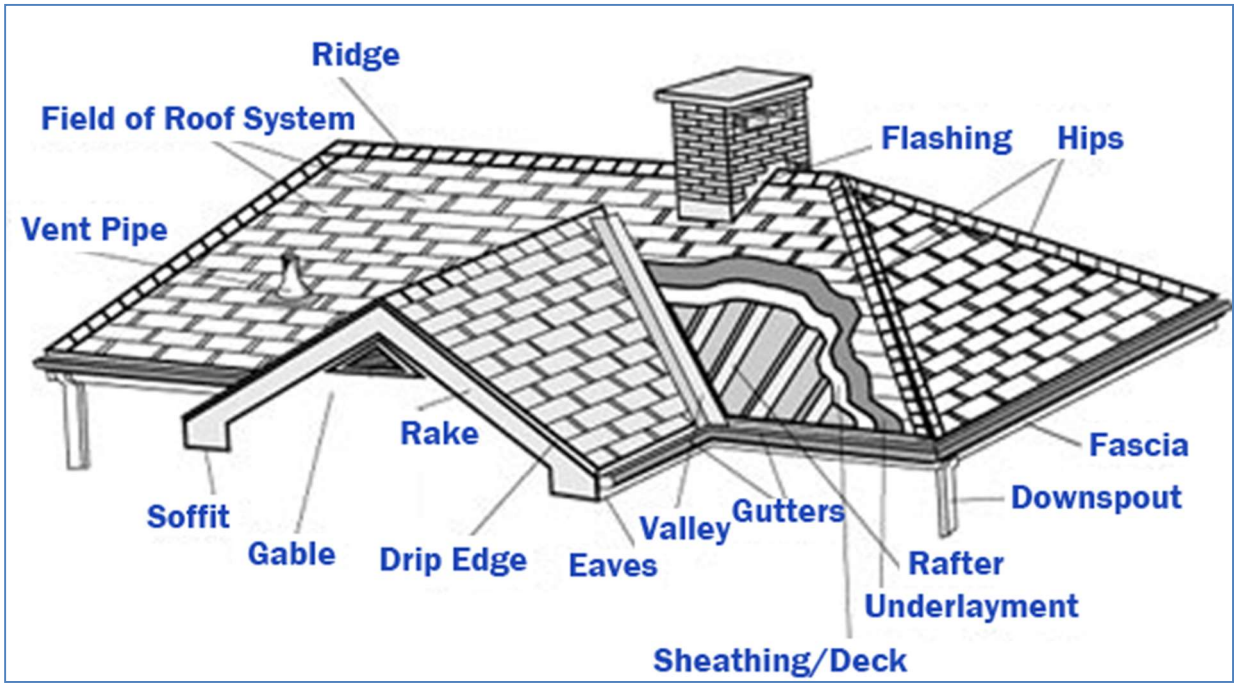
- **Eave:** the overhanging lower edge of a roof

- **Gutter:** a channel of metal at the **eaves** for carrying rainwater

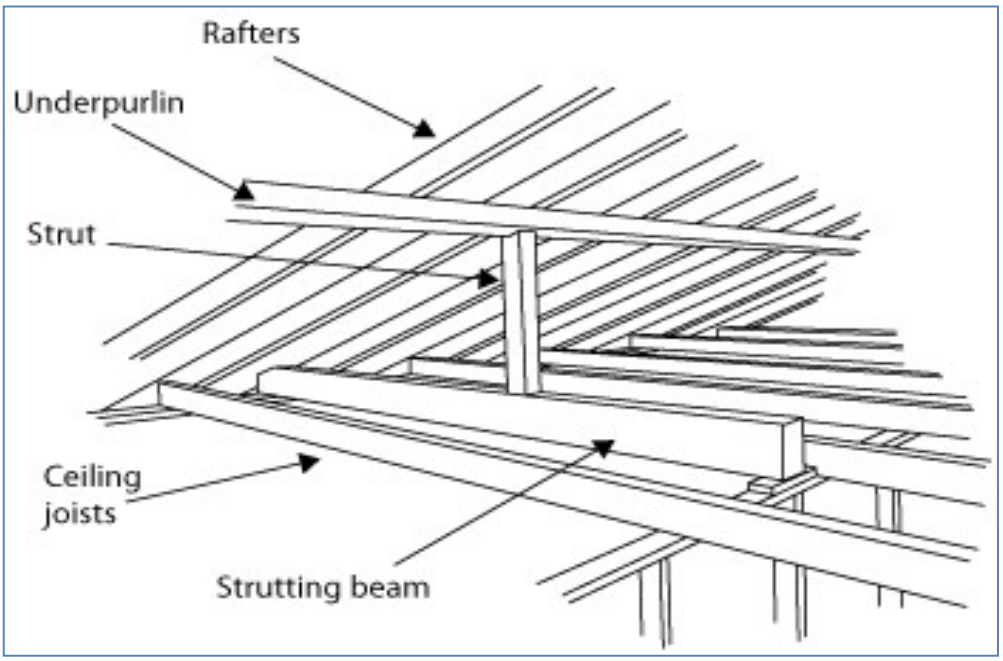
- **Ridge:** a horizontal line of intersections at the top between two sloping planes of a roof

- **Hip:** the inclined projecting angle formed by the junction of two adjacent sloping sides of a roof, and

- **Gable**: the triangular portion of a wall enclosing the end of a pitched roof from eaves to ridge.


Ridge
Field of Roof System
Flashing
Hips
Vent Pipe
Rake
Fascia
Downspout
Soffit
Gable
Drip Edge
Valley
Gutters
Eaves
Rafter
Underlayment
Sheathing/Deck

We have already studied 'beams' in module 3, the used in roofs are: **purlin, hip, rafter, ridge beams**, etc. (see illustration below).



5.6. SERVICES AND FITTINGS

5.6.1. Services

Building services are the electrical, plumbing, and mechanical systems, that is to say, the supplying of **utilities** or public services, which provide water, gas, electricity, etc. They can be divided into:

a) **Mechanical systems**

- **elevators and escalators**
- firefighting systems
- heating, ventilation, and air conditioning systems **(HVAC)**
- gas **supply systems**

b) **Electrical services**

- Power supply
- Backup power such as diesel generators

c) **Plumbing systems**

- Water supply
- Water recycling systems
- **Drainage of wastes**

d) **Data base systems**

- Fire alarm systems
- Security systems
- Cable TV systems

Building services play a central role in the design of a building in terms of façade engineering, weights, sizes and location, position of vertical services risers, routes for the horizontal services, drainage, energy sources, sustainability, etc. This means that building services design must be integrated into the overall building design. On complex building projects, in addition to an architect, an engineer might be appointed as the leader designer. The use of 3D computer aided design (CAD) systems and building information modelling (BIM) help with problems between building services and other building components such as delays or variations on site.

5.6.2. Fittings

Fittings: there is not a universal definition of this term, some dictionaries define fittings as small components, usually of metal, that are fixed to a primary component for a specific purpose. Other sources define fittings as any item that is free standing or hung by screws, nails or hooks. The Penguin building dictionary defines 'fittings' as devices for joining lengths of **pipe, duct, scaffold tube, cable**, etc., to make end joints, corners, etc.

Many times fittings is associated with **fixtures**. The difference between those two terms is that fittings can be associated with items that can be removed, such as mirrors, curtains, free-standing fridges, etc. However, fixtures are items such as baths or built-in ovens, which cannot be removed. Nevertheless, this interpretation can cause problems in contradictory phrases such as, fitted carpets, fitted cupboards, light fittings, fitted kitchens, bathrooms fittings, etc.