

UNIT –III DESIGN OF SLABS AND STAIRCASE

TYPES OF STAIRCASE

General

Staircases are generally provided connecting successive floors of a building and in small buildings. They are only means of access between the floors. The staircase comprises of flight of step generally with one or more intermediate landings provides between the floors level.

Dog-legged staircase is the most common type used in all types of buildings . it comprises of two adjacent flights running parallel with a landing slab at mid height.

Loads on staircases

The various types of loads to be resisted by the staircases are grouped under dead and live load

1. Dead load which includes the self-weight of the stair , tread and risers and self weight of finishes
2. Live load to be considered are specified in IS 875-1987 for residential buildings a uniformly distributed live load of 2 to 3 KN/m² depending upon the users and for public buildings, a uniformly distributed load of 5KN/m² is specifies in the code

TYPES OF STAIRCASE

- Straight stairs
- Quarter turn stairs
- Half turn stairs
- Spiral stairs
- Curved stairs
- Dog legged stair

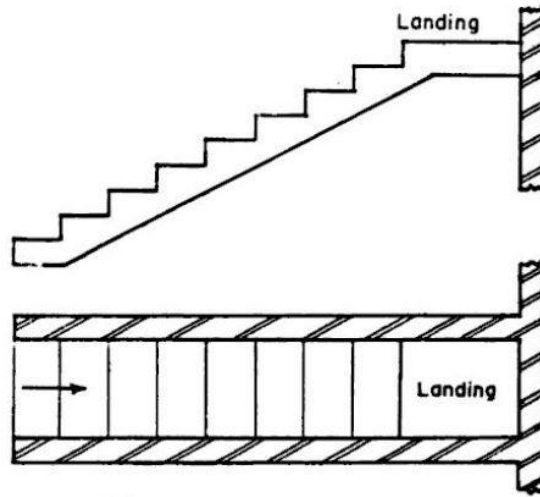
STRAIGHT STAIRS

These are the stairs along which there is no change in direction on any flight between two successive floors. The straight stairs can be of following types.

- Straight run with a single flight between floors
- Straight run with a series of flight without change in direction
- Parallel stairs
- Angle stairs

- Scissors stairs

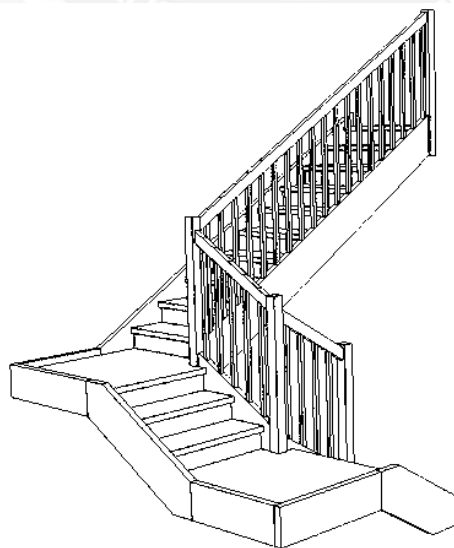
Straight stairs can have a change in direction at an intermediate landing. In case of angle stairs, the successive flights are at an angle to each other. Scissor stairs are comprised of a pair of straight runs in opposite directions and are placed on opposite sides of a fire resistive wall.



Straight Stair with Single Flight

QUARTER TURN STAIRS

They are provided when the direction of flight is to be changed by 90° . The change in direction can be effected by either introducing a quarter space landing or by providing winders at the junctions.



HALF TURN STAIRS

These stairs change their direction through 180^0 . It can be either dog-legged or open newel type. In case of dog legged stairs the flights are in opposite directions and no space is provided between the flights in plan. On the other hand in open newel stairs, there is a well or opening between the flights and it may be used to accommodate a lift. These stairs are used at places where sufficient space is available.

SPIRAL STAIRS

These stairs are similar to circular stairs except that the radius of curvature is small and the stairs may be supported by a center post. Overall diameter of such stairs may range from 1 to 2.5 m.

CURVED STAIRS

These stairs, when viewed from above, appear to follow a curve with two or more centre of curvature, such as ellipse.

DOG LEGGED STAIRCASE:

Dog legged staircase is the simplest type of stairs by which a flight of stairs moves one-half step before 180 degrees and persevering upwards. Due to its appearance in sectional elevation, it is a very common and popular stair consisting of two flights that run in opposite directions separated by a landing in the middle space. These staircases are used when the available space is equal to twice the width of the stairs and stairs lie in their compact layout that has better circulation from a design point of view.