

LECTURE #2

- * Selection of site for building
- * Orientation of building
- * Ventilation of building.

Site selection

- * Before planning, design and construction it is essential to select a suitable site for the building.
 - * Selection of site depends upon the purpose for which the proposed building is to be constructed.
 - * Selection of site for building plays an important role as it has a direct effect on the following after its construction:
 - The cost of construction
 - Its maintenance
 - The living conditions
- } points to be noted in site selection

Factor affecting site selection

- * Level of site: Must be higher than surroundings so as to provide good drainage.
- * Climate conditions:- The intensity of rainfall and sub-soil water level should be low to avoid dampness in the building.
- * Soil conditions:- Hard ^{layer} stratum of soil should be available upto reasonable depth so as to construct foundations of the building safely and economically.

* Availability of services:- The site must be within municipal limits so that water supply, electricity, drainage, roads etc are available.

* Surroundings:- The surroundings of site must be such as to suit the purpose for which the building is to be constructed.

Surrounding of buildings.
Each type of building requires different type of surroundings.

* A residential building shall have post office, bank, market, cheap transport in its surroundings. The site shall provide un-obstructed sunlight & breeze and shall maintain privacy of occupants. should not be in surroundings where there are multi storey buildings.

* A commercial building shall have good approach roads and parking facility in its surroundings.

* An educational building shall have quietness in its surroundings, playgrounds and possibility of further extension, and shall be away from main roads and busy localities.

→ There should have no bus stops.

* A hospital/health centre shall have quiet locality and convenient access.

* A recreational building shall have sufficient car parking and shall be accessible to an extent that noisy events doesn't disturb the community nearby.

* An industrial building shall have accessible roads for employees & goods, and shall be away from residential areas so that its noise, air and water pollution least affect them.

Oriention of Buildy.

* It is the art of placing various features of a building in some specific direction, according to the location and seasonal variation.

* It involves arrangement of rooms, front view, entrance etc. so as to provide natural comfort to occupants as well make the building energy efficient.

* The design phase gets started once orientation of building is decided.

* Good orientation, combined with other energy efficiency features, can reduce or even eliminate the need for auxiliary heating & cooling.

* This increase the energy efficiency of the building, making it more

Pak → northern
hemisphere

Australia → southern
hemisphere.

comfortable to live/work in it &
becomes cheaper to run.

- Purpose of building orientation
- ▶ To place the building so as to suit surroundings.
 - * To provide maximum natural comfort to the occupants.
 - * To maintain privacy of occupants.
 - * To protect occupants from dust and noise.
 - * To prevent dampness in the building in case of rainfall.
 - * To reduce purchase energy requirements of the building.

Factors affecting orientation.

- * Climatic Condition: In hot climate zones direct sunlight shall be excluded by using trees, adjoining buildings to shade the facade (view).
- * Sun path: south orientation in northern hemisphere is generally desirable.
- * South facing facades receive maximum sunlight penetrations in winters, causing green house effect and killing germs.
- * The summer sun is high in the sky and eaves/sun shades on building prevent direct entry of sunlight.
- * Direction of street/road and adjacent buildings: The building's front elevation shall face the accessible roads/street. Position of adjacent

buildings should be utilized to have desirable amount of sunlight.

* Direction & intensity of winds.

The building should be so oriented that cool breeze enters the bedroom during night in summer but not in winter.

* Nature of rainfall: The building should be so oriented as to prevent entry of rain inside the rooms. Minimum portion of the building shall be subjected to direct showers to prevent dampness.

Ventilation of buildings.

* It is a mechanism for supply of fresh air into the building and removal of foul air from the building.

* It is essential to adjust the flow of air currents through the rooms and corridors etc of building to remove foul air and to provide fresh air constantly.

* A well-ventilated building provides comfort and health by providing fresh air for breathing to the occupants.

Objectives of ventilation

* To provide constant fresh air by replacing foul air in the room.

* To remove unpleasant odor due to humidity and warmth.

* To stop growth of germs by continuous change in air supply.

Basic elements of ventilation.

1. Ventilation rate:-

The amount of outdoors air that is provided into the space and the quality of the outdoor air.

2. Air flow Direction:-

The airflow direction in building, which should be from clean zones to dirty zone.

3. Air distribution or air flow pattern.

The external air should be delivered to each part of the space and the airborne pollutants generated in each part of the space also be removed in an efficient manner.

Methods of ventilation

1. Natural ventilation- Ventilation is done by providing opening in opposite walls of a room. It is also called cross ventilation.

2. Artificial methods

Ventilation is done by providing exhaust fans, by repelling foul air causing reduction in air pressure inside the room so that fresh air enters.

through the openings

* Hybrid/mixed Methods

when natural ventilation flow rate is low, mechanical ventilation is added to increase the ventilation rate.

Used in rooms housing patients with airborne infection