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BASIC PRINCIPLE OF BUILDING PLANNING

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Abstract

A building must have flexible and technologically-advanced working environments that are safe, healthy, comfortable, durable, aesthetically-pleasing, and accessible. The paper describes about the Basic Principle of planning of an building considering the functional factors such as orientation, lighting and ventilation, and activity and circulation space planning. These elements relate to the fit between the building and the user's activities. The planning satisfies specific space and equipment needs of the tenant. This presents a conceptual framework aimed at implementing sustainability principles in the building industry. The proposed Principle based on the sustainable triple bottom line principle, includes resource conservation, cost efficiency and design for human adaptation. Following a thorough literature review, each principle involving strategies and methods to be applied during the life cycle of building projects is explained and a few case studies are presented for clarity on the methods. This Principle will allow designer teams to have an appropriate balance between economic, social and environmental issues, changing the way construction practitioners think about the information they use when assessing building projects, thereby facilitating the sustainability of building industry.

Keywords: *Planning, Aspect, Prospect, Roominess, Grouping, Sanitation, Flexibility, Elegance, Practical consideration.*

INTRODUCTION

The term planning of building by an engineer is used to mean the arrangement of all the units of a building on all floors and at all levels and it not only includes the horizontal layout but also it takes into consideration the height and level to accommodate the space enclosed by walls, floors and roofs. The planning of the building is done to arrange the location their sizes so that it should fulfill the requirements for which it is constructed. During the planning of town, various types of buildings are arranged systematically. Roads sewer lines water supply lines, electric lines, school, cinemas houses, parks, hospitals, residential building, shopping areas etc. are well located. Each type of building has its own requirements to suit its purpose in the best possible manner. The functional planning is done in the best possible manner. To avoid haphazard development of town which creates lots of problem, the corporations of all cities have laid down the building bye-laws which govern the various aspects of the building planning. Main consideration of planning is:

- Human habitation and their requirement.
- Bye-laws for planning and construction.
- Topography and size of plot.
- Climatic condition and effect.
- Available finance
- Location and neighborhood
- Comfort, Safety and Economy

2. BASIC REQUIREMENTS OF BUILDING PLANNING

2.1 Utility of Space: The planning of building has to give due consideration to the utility of the building. A residence must have living room, bed room, kitchen, bath, W.C., verandah and circulation space.

2.2 Selection of Site: The selection of the site has an important bearing on the planning as well as designing a building**.** A building has to planned depending on the location and the geometry of the site. Owner should keep in mind the requirement as per family size and life style while purchasing land for residence.

2.3 Regulation and Bye- Laws: Local authorities have defined certain rules for the construction of various type of building. Owner and engineer must consider them while purchasing the land and planning for that land. Front margin should be left as per the exposure to NH, SH, MDR, ODR.VR, urban obeyed.

2.4 Orientation of Building: The setting of plan of building en its sites with reference to the directions is known as orientation. Direct sun light, wind, rain fall its intensity and type of surroundings are taken into consideration while deciding orientation of the building. The long wall of the building should be place towards north and south. The short wall should be place towards cast and west.

The various principles, which should be kept in view while planning of buildings, can be broadly summarized as under:

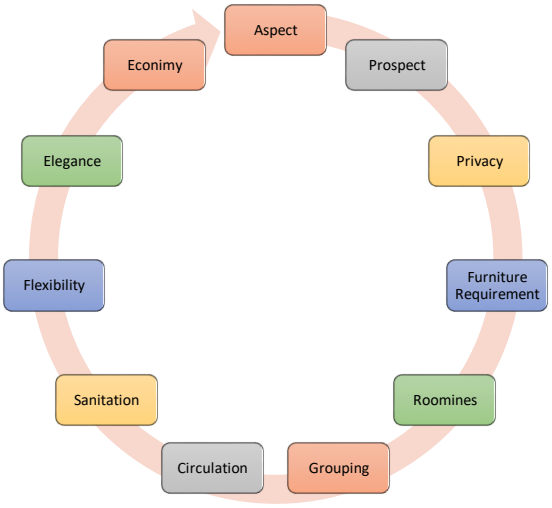

Fig 1 Principle of Planning

3. ASPECT

Aspect is concerned with the orientation of the building. The aspect of the house should be such that it enables the family members to live comfortably. Aspect meant the peculiarity of the arrangement of doors and windows in the external walls of a building, particularly of residential buildings, which allow the occupants to enjoy the natural gifts Such as sunshine, breeze, Scenery etc. Aspect provides comfort and is important from the hygienic point of view as well. A room receiving light and air from any particular direction is said to have aspect of that direction. A building must be designed to suit the site with all its varying aspects. Aspect is a very important consideration in the planning of a building. It influences the appearance of a building.

3.1 Living Room- The living rooms should have southern or south-cast aspect. The sun is towards south during cooler days and the living rooms with south aspect will be benefitted by the sunshine when it is desired in winter and obviate automatically during summer as the sun would be on northern side, over head or at high altitude, towards south.

3.2 Kitchen-A kitchen should have eastern aspect so as to admit morning sun to refresh and purify the air. The kitchen

would remain cool during the latter part of the day

3.3 Bed Room-All the bedrooms should have west or south aspect. West or South-west aspects the breeze required particularly in summer would prevail from that side. There will be no sun from the south side most of the year, the laundries and store rooms may be provided on that side. Light from North - evenly Distributed the Studios, reading rooms and class rooms are laid out with north aspect.

Aspects of different rooms of residential building are shown below.

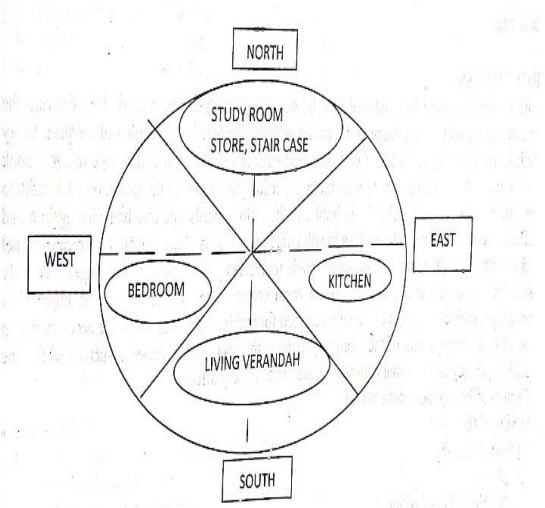

Fig 2 Aspects of Room

Table: 1

Room	Recommended Aspect	Influence Factor
Bed	NW-W-SE	To induce plentiful of Breeze in summer
Kitchen	E-NE	To receive morning sun which is germicidal, if purifier the air it should be cool during summer
Dinning	SE-S-SW	Proximity of Kitchen, it should be cool
Drawing	SE-S-SW-W	Adequate natural lighting during winter and obviate the sun during summer
Reading	N-NW	Light from north being diffused and evenly distributed
Store	NW-N-NE	Dark and cool

4. PROSPECT

Prospect is the view from outside of a house. The house should have a proper prospect so that it can give a feeling of cheerfulness to the people living in it. It is to enrich the outside view i.e., elevation view created by prominently exposing the better constructed and better looking portions and at the same time concealing the view from any undesirable once, It should create a good impression on a person who views it from outside. Prospect should reveal pleasant features and hide unpleasant and undesirable features of the house. Prospect must not only make outer appearance attractive, but side by side also maintain qualities such as comfort, security. The outside appearance can be improved by attractive planning and utilization of good landscape.

5. ROOMINESS

The roominess could be produced in a house by using small proportions. It is deriving the maximum benefit from minimum dimension of the room without cramping of the plan. Every unit in the building is matter of cost, so we must take the maximum advantage of every nook and corner. A square room is less useful than a rectangular room of the same area. A breadth to length ratio of 1:1,2 to 1:1.5 is desirable. If the ratio exceeds one and half then again a bad effect is created. A room having its length twice the width is objectionable as it creates tunnel like feeling. Small room should not be made unnecessary high. Such rooms appear relatively smaller. The size and shape of certain room create desirable and undesirable impressions regards roominess. Skill is essentially required for making use of the available accommodation by suitable arrangement of the rooms, by locating the doors and passages in such a way that the utility, privacy and external appearance, are not adversely affected.

Factors affecting the roominess are

- Size of the room

- Furniture used
- Shape
- Position of door window

6. FURNITURE REQUIREMENT

Furniture is the functional requirement of a room. Drawing room, living room, kitchen Laboratory room, office roam, a class room etc. all has their own requirements. There is no Hard and fast rule so as to decide the furniture requirements for a particular room, but it should be adequate to accommodate the normal needs of maximum number of persons who can use a Dwelling without overcrowding. It is better to prepare a sketch plan indicating furniture Position, so that it can made sure that doors, windows and circulation space do not preclude the Placing of a sufficient number of pieces.

7. GROUPING

The various rooms in a building should be arranged in proper sequence and correlation for easy and proper movements of occupants. Grouping minimizes the circulation and at the same time improves the comfort, privacy of the house. Point to be considered

- Veranda adjacent to drawing room
- Dining room close to kitchen
- Bed room, toilet and dressing room grouped together.
- Bath and w/e should be nearer to each other
- Staircase should be easily accessible from all room
- W/C should be away from dinning.

8. CIRCULATION

Access used for getting comfortable communication from one room to another or from one Floor to another is known as circulation. Passages, corridors, halls, lobbies, serve the purpose of Horizontal circulation, whereas stairs serve the purpose of vertical circulation. Circulation Between rooms of the same floor is known as horizontal circulation, whereas circulation among various floors is known as vertical circulation. Area of horizontal circulation may be consists of 20% to 25% of the total building area. Area of Vertical circulation is about 8% to 10% of total area. Passages, corridors, halls, etc. used for horizontal circulation should be independent, short, and Straight and should not invade the privacy of any room. Circulation should neither affect the Privacy of a room nor interfere with the utility of space. Points The following points should be planning the circulation areas:

- They should be straight.
- They should be sufficient.
- They should be well lighted and ventilated.
- Stairs should be easily accessible to all users.

9. PRIVACY

Unless an optimum privacy is secured, all the principles of planning of a building are bound to fail, particularly in case of residential buildings. Privacy may be from one part to another of the same buildings or it may be privacy as a whole from neighbouring buildings, public streets or by Ways. Privacy is broadly classified as:

i) Internal privacy: The internal privacy can be achieved by providing lobbies or screens, all these services should be independent for every bedroom without disturbing the others. The privacy depends on fixing the position of doors. Internal privacy is the privacy within the building. It can be easily achieved by:

- Proper grouping of rooms.
- Careful planning of entrance and circulation space.
- Better disposition of doors and windows.
- Provision of small corridor or lobby.

ii) External privacy- External privacy is the privacy of the whole building with reference to the surrounding building and roads, it can be achieved by:

- Having a compound wall to a height of 1.35m to 1.50m.
- Fixing screens on the door and windows of the house so that one

cannot have a full view of the internal parts of the house from outside.

- Planting trees along the compound wall which acts as sound barriers and sight barriers as well.
- If the house is built at the backside of the plot with enough distance from the highway and streets, then privacy can be maintained easily. The house should not be built at the edge of the road.

10. SANITATION

The health of the family members depends upon the sanitary condition of the house. Provision should be made for proper lighting, ventilation, cleanliness and other sanitary conveniences in the house. All the rooms should be well lighted and well ventilated. There should be windows on opposite wall of the room to have cross ventilation. Instead of one window, there should be two or three windows in different walls of the rooms so that all the rooms can get sufficient light and air. Factors influence sanitation is

- Lighting
- Ventilation
- Cleanliness

11. ECONOMIY

Building should have minimum floor area with maximum utility. It should not exceed at the cost of strength. Only with proper planning and utility of space being maximized. It can achieved by

- Simple elevation
- Reducing storey height
- Reducing number of steps of stair
- Standardization of size of various components and materials
- Dispensing of balconies, lobbies

12. FLEXIBILITY

It means that the room can have multi-purpose use. When there is shortage of space, flexibility of room becomes important. Flexibility means planning the rooms in such a way which though originally designed for a specific purpose, may be used for other purposes also as and when desired. For e.g. a living room can be converted to bedroom at night when needed. Flexibility is important for those who live in flats.

- It is ease with which a room designated for a particular activity can accommodated more load temporarily or may supplement of another room.
- As drawing room used as guest bed room.
- Kitchen as additional dining room.

13. ELEGANCE

It is grand appearance of the building. Mainly owing to the elevation which in turn depends on plan is known as elegance. It depends on Elevated site, Architecture, Neighbourhood, Adjoining building and relative placement A better elegance can be obtained by

- Superior building material for facing- like paint, glass, timber, polished stones- granite, marble, mosaic etc.
- Providing projection- like sun shades, balconies etc.
- Providing bay windows, corner windows etc.

14. PRACTICAL CONSIDERATIONS

Practical consideration plays an important role while constructing a house. The ease of cleaning and maintenance should be kept in mind while finishes are decided for floors and walls. Smooth and unbroken surfaces can be cleaned easily than the decorative pieces. The immediate surroundings of the house should be carefully considered. These are garden, courtyard or backyard. The garden around the house is important to beautify the house. In planning a house, the needs of the family members must be taken into consideration. Besides all the fundamentals of planning discussed, following practical points should be additionally considered:

- The building should be strong and capable to withstand the likely adverse effects of natural agencies.
- Provisions for future extensions without dismantling should be made in the planning.

- Strength, stability, convenience and comfort of the occupants, should be the first consideration in planning.
- As far as possible sizes of rooms should be kept large. Large room can be shortened by
- Providing movable partitions but small rooms cannot be enlarged easily.
- Elevation should be simple but attractive. Too many porches may give good elevation for
- Some time, but ultimately simple designs fit better for generations.
- Amalgamation:-combining two or more plot as a single plot.
- Amenities: - Means roads, open space, parks, garden, water supply, electric supply, lighting and drainage.
- Bifurcation: - Means bifurcation of a plot into two.
- Building line: - mean the line up to which the plinth of a building may lawfully extend within the plot on a street or an extension of a street. No overhead projections are allowed beyond the building line.
- Frontage: - Frontage means the width of the site abutting the access road.
- Building setback: - minimum distance between any building and any structure from the boundary line of the plot.
- Carpet Area:-As its name suggests, carpet area is the area where we can spread a carpet, Means are calculated from inner wall to wall distance inside the house. So essentially, carpet area is nothing but the net usable area inside the house. It is 50 to 60% of the plinth area.
- Floor area ratio: - Abbreviation of the whole words "F.A.R". Means the quotient obtained by dividing the total area on all floors of a building by the area of the plot

CONCLUSION

Functional requirements are to be taken into account for efficient planning of an block. The time spent for this purpose is really worthwhile from the point of view of the correct approach to planning and construction. While planning a building, the principles of planning are considered in close association with the theoretical and practical aspects. All the principles may not be rigidly possible to adopt and there should be some scope of flexibility. Sustainable building is considered as a way for the building industry to move towards protecting the environment. The promotion of sustainable building practices is to pursue a balance among economic, social, and environmental performance in implementing construction projects. If we accept this, the link between sustainable development and construction becomes clear; construction is of high economic significance and has strong environmental and social impacts. With the growing awareness on environmental protection, this issue has gained wider attention from construction practitioners worldwide. Implementing sustainable building construction practices has been advocated as a way forward in fostering economic advancement in the building industry while minimizing impact on the environment. In order to reduce these detrimental impacts of construction on the environment and to achieve sustainability in the industry, three principles emerge: resource efficiency, cost efficiency and design for human adaptation. They form framework for integrating sustainability principles into construction projects right from the conceptual stage. The framework has considerable potential to accelerate the understanding and implementation of sustainability in building construction. It provides a brief overview of sustainability principles, strategies and methods, and emphasizes the need for an integrated and holistic approach for implementing sustainability in building projects. It is intended to provide a general framework for improving the quality and comparability

of methods for assessing the environmental performance of buildings. It identifies and describes issues to be taken into account when using methods for the assessment of environmental performance for new or existing building properties in the design, construction, operation, refurbishment and deconstruction stages. It is not an assessment system in itself but is intended to be used in conjunction with, and complimentary to existing assessment systems such as BREEAM, BEES, LEED, etc. These sustainability requirements will be applicable throughout the different stages of the building life cycle, from its design, during its useful life, up until management of the building waste in the demolition stage. This framework lays the groundwork for the development of a decision support tool to help improve the decision making process in implementing sustainability in building projects. The full decision support tool will be described in the model currently being developed for use in the UK building industry.

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