

Planning Modern Residential Buildings

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Introduction

There is a worldwide trend, particularly in the developing countries, of continuous migration of people from rural areas to cities in search of better livelihood and urban facilities like education, health and other services which are not available to them in rural areas. There is growing aspiration for a better standard of living due to the present economic growth resulting from globalisation. India is a vast country with a population of more than one billion; thirty percent of its population lives in cities.

All residential buildings should be robust enough to outlast the design period. Residential buildings need to be designed intelligently so as to provide all the modern amenities and comfort to the residents at the lowest cost and energy consumption. On the other hand, residential buildings should be energy efficient, that is, green for which non-conventional sources of solar energy (renewable) should be harnessed fulfilling the world's need for sustainable development. Sustainable development means utilising natural resources in such a way that it does not compromise the ability of future generations to lead a satisfactory life.

Parameters of Construction

Engagement of Competent Civil Engineer

Construction of buildings should be entrusted to an experienced civil engineer. The civil engineer should make an economic design without compromising on environmental considerations. The client of a residential building should appoint a civil engineer possessing adequate knowledge of all facets of civil engineering including interior finishing work. The interior finish and decoration is a vital item which relates to comfort and liveability. Multi-purpose rooms, flexible separators between different parts, control of sunlight by deep overhang, providing cross-ventilation in rooms, use of thermoplastic items in kitchen and

bathrooms and, if possible, artificial plantations over roof or landscape gardening depending on whether one lives in an apartment or own house are needed.

Use of Green Technology

Natural resources should be utilised in a more rational way by promoting green buildings within constraints of finance. Renewable energy such as use of solar energy should be given preference over burning of fossil fuels to reduce the consumption of conventional power run by fossil fuels. It is a fact that fossil fuels are being used in an unsustainable way. So, the importance of non-conventional power systems cannot be ignored to save conventional power. Thermoplastic compounds like polyvinyl chloride and polyvinyl fluoride products should to be used more intensively in green buildings, especially for plumbing items, electrical fittings and insulating materials. These can sustain their properties for a long time against aggressive environment. Thermoplastic epoxy compounds, in different forms, can be suitably used for concrete repairing and rehabilitation works to lengthen the life of green buildings.

Speed of Construction

The speed of construction should never compromise with the structural stability and architectural finish of a residential building. The architectural part is an important aspect of construction of a green building. The extra hours needed for the exterior and interior finishes should be taken into account in framing a realistic time table for completion of construction.

Economy of Construction

From the point of view of economy of construction, cost-effective items, like thermoplastic compounds, should be used. To the extent finances permit, automation should be made in a residential building so as to save power with consequent reduction of electricity bills.

Safety and Other Aspects

Health

Adequate supply of pure drinking water has to be supplied to residential buildings. Rooftop rain water harvesting should be done to the greatest extent possible.

Comfort

Comfort is to be provided to the occupants to the extent possible. For this purpose, the building should have proper orientation, control of sunlight, cross-ventilation, etc. In keeping with the green concept, artificial plantation in the form of garden on the roof will reduce the pollution and the load of air-conditioning system of the apartment. The comfort of the residence lies in providing correct air change in the rooms. The desirable air change in room is six to eight for living and bed rooms and four to six in the kitchen and bathroom. Noise levels above 30 to 40 decibels are to be controlled by providing insulating walls with foam or glass fibre panels.

Fire Alarm

Protection against accidental fire has to be provided by fire safety equipment. The residents have to be warned by fire alarm system in case of fire so that they can escape by an emergency exit. These emergency exits can also be used in earthquakes. The occupants have to be warned by electronic fire alarm system in case of fire in the building so that they may move to safe exit.

Natural Calamities

In case of natural calamities especially earthquake and fire, standby arrangement for safe exit is a necessity for the occupants of the green building.

Security

A burglar alarm system is necessary in modern residential buildings. Security guards and electronic protection measures are needed to be installed in modern residential buildings. The design of security system is necessary for protection of life and property of the residents of the building. Electronic fencing, electronic automatic doors and surveillance system through close circuit television (CCTV) need to be installed in buildings.

Durability of Green Buildings

The durability of buildings depends on the structural strength of the building including the architectural renderings with the ability to withstand aggressive environments for decades. For this, continuous supervision and monitoring every sequence of construction is necessary.

Quality Construction

Quality construction can be achieved by adopting by right construction methodology with right men, right materials and right machineries and right building materials taking into account green technology.

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