



RESIDENTIAL AND PUBLIC BUILDINGS ARCHITECTURAL-CONSTRUCTION DESIGN

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ABSTRACT

This article comprehensively and systematically covers the process of architectural and construction design of residential and public buildings. The theoretical foundations of design, functional planning principles, constructive solutions, engineering systems, and modern energy-saving and environmental requirements are scientifically analyzed. The article describes the role of residential and public buildings in urban planning, their importance in supporting human activity, innovative approaches introduced in the architectural and construction process, as well as effective recommendations aimed at improving the quality of the project.

Modern cities are becoming multifunctional and densely populated areas. In such conditions, architecture and construction must fulfill not only technical and engineering tasks, but also important social, cultural and environmental tasks.

The quality of life of the population, the efficiency of public services, the level of social activity and the comfort of the urban environment directly depend on the functional, aesthetic and constructive quality of residential and public buildings. Therefore, it is important to comprehensively take into account modern requirements, regulatory documents, energy-saving technologies and environmental approaches in the process of building design.

Structural systems and engineering solutions play an important role in the design of multi-storey residential buildings. In such buildings, the foundation and supporting structures must be strong, and seismic requirements must be strictly taken into account. Especially since the territory of Uzbekistan is considered a seismically active zone, special calculations are carried out when designing buildings. In multi-storey buildings, elevators, fire escapes, evacuation routes and common areas are located in accordance with safety standards. It is also important to organize playgrounds, parking lots and green areas in order to create comfort for residents of these buildings. Main features of multi-storey buildings Multi-storey residential buildings are distinguished by the following features: consistency of several floors; the presence of common areas; the mandatory installation of elevator and staircase systems; a complex system of engineering communications; high level of structural strength requirements. These

features require a special approach to the design of multi-storey buildings. Functional requirements in the design of multi-storey buildings. Special attention is paid to functional convenience when designing multi-storey residential buildings. In the internal planning of the building, the logical connection between rooms, the location of living and utility rooms should be properly organized. The kitchen, bedroom, living room and bathrooms should be located at a convenient distance from each other. In addition, common areas - the entrance, corridors, stairs and elevator halls - should be spacious and comfortable. This ensures not only comfort, but also safe movement in the building. Constructive and technical requirements Since multi-storey buildings operate under high loads, their constructive solutions must be strong and stable. In modern construction, the following constructive systems are used for multi-storey buildings : reinforced concrete frame system; monolithic concrete structures; prefabricated reinforced concrete systems; combined constructive solutions. In particular, in regions with high seismic requirements, constructive solutions are developed based on special standards.

The concept and stages of architectural design

Architectural design is the process of scientifically developing the functional, structural, aesthetic, and engineering aspects of a building or structure before its construction. Design consists of the following stages:

- study the project assignment;
- analysis of the territory and natural conditions;
- development of a draft project;
- development of plans, sections and facades;
- selection of structural and engineering solutions;
- preparation of final project documentation.
- Regulatory documents and construction standards are followed at each stage.

Residential buildings are the main places where people spend their daily lives. Therefore, comfort and safety are the most important criteria when designing them. Residential buildings:

- creates a healthy environment for living;
- provides family life and recreation;
- is an important part of the city's infrastructure.

A properly designed residential building has a positive effect on human health and mental state.

Residential buildings are divided into several types . Each type has its own architectural and structural solutions:

- Single-family homes are low-rise and designed based on individual needs;
- Multi-storey residential buildings - designed for densely populated areas;
- Residential complexes - combine living, recreation, and service functions;
- Mixed-use buildings - combine residential and commercial or service premises.

Urban planning factors play an important role in the design of residential and public buildings. Each building is considered not as a separate object, but as a component of the overall urban structure. The connection of the territory with transport networks, green spaces, engineering infrastructure and social facilities is carefully analyzed.

In urban planning analysis, functional zoning of the area where the building will be located is important. Residential areas should be separated from industrial and noisy zones,

and public buildings should be located at a convenient distance for residents. This approach serves the comfortable and sustainable development of the urban environment.

The area planning process also takes into account sunlight, wind direction, and terrain features. These factors directly affect the energy efficiency and indoor microclimate of the building.

Architectural and planning solutions determine the functional and aesthetic qualities of the building. In residential buildings, the layout of rooms, the interconnection of common and auxiliary areas are aimed at creating comfortable living conditions.

When designing apartments, living rooms, kitchens, bedrooms, and bathrooms are logically connected. Balconies and loggias also enrich the appearance of the building and create additional comfort.

In public buildings, special attention is paid to entrance areas, user flow, and common areas. Corridors, halls, and staircases must be wide and safe.

Architecture is not only a technical field, but also an art. Therefore, the exterior and interior appearance of buildings is formed based on aesthetic requirements. Facade composition, color harmony and selection of materials are important.

Modern projects combine national traditions and modern styles. This approach gives buildings their own uniqueness and cultural significance.

Interior design takes into account ergonomics, lighting, and color psychology, which have a positive effect on a person's mental state.

During the architectural design process, strict adherence to building codes and regulations is essential. These codes ensure the safety, durability, and longevity of buildings.

In accordance with fire safety requirements, the use of evacuation routes, emergency exit doors, and fire-resistant materials is mandatory.

In addition, the issue of earthquake resistance is particularly important, and structural elements are designed based on special calculations.

Creating an inclusive environment is an important requirement in modern architectural design. Residential and public buildings must be accessible to all classes.

Ramps, elevators, wide doorways, and special restrooms provide accessibility for people with disabilities, helping to ensure equality and social justice in society.

The issue of economic efficiency also plays an important role in the design process. Construction materials, technologies, energy consumption, and operating costs are taken into account.

An economically sound design speeds up the construction process and reduces future building operating costs.

Public buildings are structures that serve the needs of society and play an important role in the education, treatment, recreation, and social activities of the population. Examples of public buildings include schools, hospitals, shopping malls, cultural centers, and sports facilities.

The main requirements for the design of public buildings are the flow of people, safe movement, evacuation routes and creating comfortable conditions for people with disabilities. In addition, since public buildings are the main architectural objects that determine the appearance of the city, their appearance requires special attention.

Architectural design is a complex process consisting of several successive stages. First, a pre-project analysis is carried out. At this stage, the location of the construction site, climatic conditions, relief and engineering networks are studied. This analysis forms the basis of the architectural and structural solutions that will be adopted in the future.

The next stage is a sketch project, in which the general volumetric and compositional solution of the building is developed. The sketch project defines the conceptual basis of the architecture and is agreed with the customer. After that, the stage of detailed planning and working drawings begins.

The layout of a building is one of the main factors determining its functional convenience. In residential buildings, living rooms, kitchens, bathrooms, and utility rooms should be conveniently connected to each other. In public buildings, the main and utility rooms should be rationally arranged, and convenient corridors should be created for the movement of people.

The planning process also takes into account issues such as sunlight, wind direction, and environmental compatibility, which helps to increase the energy efficiency of the building.

The customs of the people also have an impact on the structure of the house. One of the most important customs of the Uzbek people is to spend more time outdoors. This custom is due to the nature and climatic conditions of our country, which requires the inclusion of open summer rooms, verandas and terraces in the structure of the house. Here, residents wait for guests, rest and sleep. The choice of the type of house is also influenced by its location. Depending on the location of the house, whether the house is in the city, in the village, in the city center or on the outskirts, different requirements arise, in addition, the height of the land, the nature surrounding the house, climatic conditions, soil composition and seismic conditions also play an important role in choosing the type of house. In particular, natural climatic conditions have a great influence on this. Houses built in the north and south are very different from each other, in addition, the influence of humid and dry climate, mountains or lowlands, deserts and wetlands also has a great impact on residential architecture. Uzbekistan consists of mountains, deserts, plains and lowlands, lush and fertile lands. Therefore, designing and building the same residential buildings everywhere in the conditions of Uzbekistan can lead to big mistakes.

In conclusion, the architectural and construction design of residential and public buildings is of great importance for the development of society. A properly designed building makes human life easier, improves the urban environment, and creates comfortable conditions for future generations. This article reflects the fact that architecture is not only a construction, but also an art form that enriches human life.

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