

## **A Review on the Principles and Criteria of Plex Housing**

### **Abstract**

Plex housing is a type of collective housing that bears common facilities and buildings such as structures and conveniences, as well as a semi-private social interaction space. These sets can be organized into groups of two to six units. Plexiglas has been proposed as a new approach that has positive aspects of biological complexes and saves energy consumption and is in harmony with nature. The need for housing, per capita shortage of urban land, economic efficiency in construction and the use of modern technology in construction, makes it necessary to offer a type of design that is superior to traditional systems. Based on this, a multi-unit housing design model is proposed. This article intends to explain the principles and criteria of design in Plex housing in order to achieve the quantitative and qualitative dimensions of the ideal design. These quantitative factors include alignment with the environment, climate and region, reducing energy consumption of the building during heating and cooling, saving per capita use of urban land, and qualitatively, promoting social sustainability is a determining factor. The research findings present the principles of Plex housing design in three dimensions: climate, social and sustainability. This can meet the requirements of the collective housing criteria and the principles and benefits of using the Plex housing as a new method in residential housing in the country.

### **Research aims:**

1. To review the positive aspects of Plex housing
2. To provide a model for the principles of Plex housing design in order to achieve quantitative and qualitative design dimensions

### **Research questions:**

1. What are the positive aspects of Plex housing?
1. What criteria and standards can be effective in plex housing design?

### **Keywords**

Plex housing, collective housing, housing typology, new housing patterns

### **Introduction**

Plexiglas is a method of designing multi-unit housing that has been proposed with the aim of providing sustainable, safe and environmentally friendly housing. Population growth and urbanization have led to the prevalence of high-rise strategy, which in turn has led to the integration of users at a limited level and the use and high consumption of energy, which is in conflict with the goals of sustainability. The need for research in this regard is evident from the fact that complex construction in Iran can be a solution to urban problems and revive the architecture of sustainable homes and energy consumption. As a result, its goal is to achieve three principles: environmental, economic and social sustainability. Environmental sustainability includes reducing the use of natural resources and non-renewable energy and preventing

energy consumption, reducing waste production and emphasizing the reuse and recycling of waste and reducing air pollution. In fact, designing a construction model can be effective in responding to rapid or gradual changes, needs and increasing complexities of cities in order to reduce the effects of heat islands, deal with the negative effects and changes of urban climate. In the Plex housing model, attention to environmental issues and climate change helps to reduce these crises in the model of this type of building, as well as multi-unit buildings, with little impact on the ground, as an optimal way to meet housing needs in large scales are central.

Due to the fact that a wide range of buildings that are built have residential use and have the highest repetition rate, a wide range of energy consumption is allocated to residential buildings. Therefore, such buildings should be designed in such a way that by placing several buildings next to each other, they can reduce energy loss. Also, due to the shortage of urban land per capita, the use of construction techniques that can reduce land use per capita and this is necessary. Plexiglas is important as a way to reduce energy and social connections, and to respect the environment and use less land. Design criteria for the development of multi-unit complexes, the design principles for these complexes are examined in detail. Also, achieving a proper design that enhances the value and appearance of the community as a whole. Therefore, the necessity of studying to reach the set criteria and design pattern has been given special attention and therefore the present article has been formed on this basis.

A review of the research background shows that no independent work has been written in this regard so far. However, some studies have examined the characteristics of Plex housing as a case study. An article entitled: "Assessing the characteristics of Plex housing in relation to indigenous hot and dry climate housing; "The City of Kerman" written by Reza Soroushnia; in this book the author has concluded that in the past; planning, indigenous housing and plexiglas have each been evaluated based on their own characteristics, and the interaction between these two types of housing has been hidden from the view of designers and planners, resulting in problems. Environmental and urban have been associated with contemporary housing; moreover, he believes that the adaptation of housing to the environment and climatic and regional conditions and the response to environmental needs have been affected by climatic conditions. Therefore, reviving the values of indigenous architecture, which contains the experiences of experienced architects in the construction of climate housing and its adaptation to contemporary housing architecture can lead to improving the quality of housing (Soroushnia, 1398: 159). According to this research, Plex housing and indigenous housing can complement each other in order to present an ideal design.

This research is entitled "Study of the principles and criteria of Plex housing", with a practical purpose and descriptive-analytical method (review of criteria). Accordingly, the research structure of the project is to present the principles of design and from the perspective of the design product will require the use of quasi-experimental methods during the research process. Data collection was completed with the help of library studies. The purpose of this article is to achieve the principles of Plex housing design in order to achieve quantitative design dimensions that include alignment with the environment, climate and region, reducing energy consumption during heating and cooling, saving per capita urban land use, enhancing quality and improving sustainability. This type of housing is a type of social housing which is based on the fact that the design approach of Plex housing as a collective housing and the characteristic of multi-unit buildings that are designed and built interconnected.

## **Conclusion**

Studies show that complexation has a lot of emphasis on sustainable living, and at the same time, this built environment can have significant effects on the behavioral environment and social interactions of people living in these complexes. In addition, complexes that have communal spaces for the residents of the complex can generally have local spaces for the residents of the entire complex, which by adapting to the climatic conditions to achieve a kind of interaction in the design of this type of housing with the environment. Environmental factors will be able to create or prevent the formation of social relationships by creating special conditions. This effect is not limited to social interactions, but will also include social institutions, that is, if the design of complexes is based on understanding the characteristics of these symbols, the built environment will facilitate its function and the built spaces in addition to environmental features and savings. The economy in terms of controlling fossil fuels will also meet the needs of users socially, which can achieve the overall goals of Plex housing, which is to achieve the three pillars of the economy, environment and society, and sustainability is achieved in this type of housing. Therefore, it can be said that climate-friendly architecture and economic efficiency are among the parameters defined in Plex housing. Changes in the type of housing in terms of shape and type of housing due to changes in consumption patterns in the field of housing and inadequate efficiency of private housing due to the high cost of maintenance, requires changes in urban planning laws; hence, Plex housing is a new type of housing. Understanding the main features of social housing and examining the related construction patterns in the design of Plex housing is important. The study of the dimensions of the desirability of urban housing in terms of climate, culture, comfort, sound, beauty and modern technology in this type of housing has been considered. The effect of complexation on sustainable life and behavioral environment and social interactions of residents can be seen in these complexes. The social sustainability of Plex housing is enhanced through the promotion of social interactions and shared collective spaces and a sense of belonging to the environment and place, and through close connection with the environment. Energy savings in Plex housing are created by the integration of structures and shared services. Plex housing has a common structural structure through a common wall, which leads to energy savings. Accesses are common in Plex housing. Areas are considered in the design of this housing. Houses are fully independent while connected. The yard in Plex housing as a collective space promotes social interactions of individuals. Creating a green environment through plants and trees in this type of housing is considered; nevertheless, the yard is deliberated as a social space that promotes social interactions.

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