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**INNOVATIVE APPROACHES IN DEVELOPMENT
ARCHITECTURE OF MODERN RESIDENTIAL COMPLEXES
(ON THE EXAMPLE OF NUR-SULTAN CITY)**

Abstract. *The article discusses the features of the housing architecture formation of Nur-Sultan city for the period from 1997 to the present. The study revealed the influence of recent socio-economic, political and technological factors of the economy. Architectural and planning features of a modern dwelling in the conditions of a capital city are shown on the examples of residential complexes like «Highville Astana», «Azure Quarter», «Seasons», «Promenade Expo», «England».*

Keywords: *residential buildings, modern dwelling architecture, residential complex, architecture of Nur-Sultan.*

Introduction

Modern socio-economic and technological conditions in Kazakhstan contribute to develop the dwelling architecture of a new formation. Development of the capital's territory, according to the previously approved master plan, presupposes an active expansion of the housing stock in connection with the high population growth. The quantitative growth of residents was accompanied by changes in the qualitative structure of the population of the new capital: the regional city changed its status, becoming the capital of the state, and acquired new functions – state, trade, media, science, culture, etc. New functions of the city provoked a powerful migration to Astana of government officials, scientists and cultural figures, engineers, builders and other professionals. Changed qualitative composition of residents affected onto supply and demand in the housing market: from standard apartments to high comfort class. The experience of the new capital shows that the architecture of a dwelling is a reaction to the socio-economic and aesthetic needs of the population and forms rather high requirements for the planning and quality of construction.

The purpose of the article is to analyze the architecture of the largest residential complexes in Nur-Sultan city, to identify the prevailing trends in the construction of modern dwellings and to determine the directions of their further development.

In December 1997, the city of Akmola was officially declared the capital of the Republic of Kazakhstan; later in 1998, the capital was renamed to Astana, and in 2019 to Nur-Sultan. Since 1997, Akmola, which had 250 thousand inhabitants, began to grow actively and an urgent need for housing was formed [1].

Changes in the socio-economic conditions of the state, gaining independence have made significant adjustments to all spheres of life, including architecture.

Materials and methods

In the process of studying the features of modern architecture of a dwelling, based on the study of scientific and design-graphic materials, we analyzed the architectural-planning, structural and technical characteristics of residential complexes built in the city of Nur-Sultan in the period from 1997 to the present.

Results and discussion

From 1997 to 2021, the capital of Kazakhstan is the undisputed leader of the country in terms of building construction. This can be seen especially clearly in the example of housing construction. Over a quarter of a century, more than 10 million square meters of housing have been commissioned in the city [1], in the construction of which dozens of domestic and foreign construction companies took part. The architectural concept of Astana was the idea of forming a special Eurasian style, combining the cultural traditions of the West and the East. The author of the master plan for the capital was the world-renowned Japanese architect Kisho Kurokawa. The planning organization of the city was influenced by the fact that the city is divided with the large river Ishim into two parts: the right and left banks. The city of Tselinograd (Akmola) until 1997 developed on the right bank. Kisho Kurokawa proposed to develop the city on the left bank of the Ishim in accordance with the concept based on the self-developing structure of the city, the symbiosis of natural and artificial environments. K. Kurokawa abandoned the idea of a complete planning and designed a city capable of growth; a system that can respond flexibly to paradigm changes [2].

The architectural and construction experience of the capital has become a driver of Kazakhstan's development: socio-economic transformations, the introduction of new international standards in design and construction have made numerous adjustments and affected the quality of architecture in all regions of Kazakhstan. In the mid-1950s, hundreds of thousands of standardized block residential buildings were built in the USSR, of which Kazakhstan was also a part, which to some extent solved the problem of housing shortages. However, the aesthetics of the external appearance of buildings and comfortable living in them did not imply any excesses [1]. Living in standard, the same type, cramped apartments was typical in the socialist era, but the way of life at the beginning of the 21st century presupposes completely different ideas for the formation of housing space.

The requirements and demand in the housing market determine the introduction of the latest technologies in construction, which is offered by the largest commercial and government developers in various projects of the now popular multi-storey residential complexes.

The development of the style of architecture of residential buildings in Nur-Sultan is conditioned by the influence of numerous factors of shaping – ideological and artistic, constructive, functional, climatic and socio-economic. The main style direction in the architecture of residential buildings in the capital is avant-garde which reflects a radical renewal of form in architecture under the influence of technological progress.

The scale of the extensive construction of the capital required the development of approaches that ensure the formation of the architectural unity of the spatial environment, in accordance with the developed master plan: it was decided to conduct construction in the city by the method of complex development of the territory of each quarter by only one developer. Thus, the practice of building residential complexes, including a set of various objects, was formed in the city. Residential complexes of a modern type include a number of objects in the city of Nur-Sultan (Highville Astana, Azure Quarter, Seasons, Promenade Expo, England), which taking into account the needs of various population groups, have on the territory all social, cultural and leisure facilities necessary to serve the residents of the microdistrict, and also include apartments with a wide range of layouts, areas and functional purposes.

The residential complex «Highville Astana» is the first project of a South Korean developer on the Kazakh market, the construction of which began in 2007 (Fig. 1). It is located in the area of influence of the main attractions of the capital: in the immediate vicinity are the Presidential Palace, the Khazret Sultan Mosque, the Shabyt University of Arts, the Independence Palace, the Ambassadorial town, the Peace and Reconciliation Palace.

Located within the business area of the city, the residential complex «Highville Astana» has a developed internal infrastructure: there are a pharmacy, a supermarket, a coffee shop, a beauty salon, a sauna, a fitness club, a medical center and other service facilities.

Additional functions of the residential complex are heated parking, proximity to city parks; a closed and wind-protected courtyard, equipped with fountains, terraces for relaxation, garden pavilion, playgrounds, as well as an extensive walking area (Fig. 1.1).



Figure 1 – Residential complex «Highville Astana». [Electronic resource: <http://www.kn.kz>]



Figure 1.1 – Residential complex «Highville Astana», a fragment of the courtyard. [Electronic resource: <http://www.kn.kz>]

By 2008, two houses with a height of 20 and 25 floors were commissioned, including 16 variants of apartments of the author's design from classic to modern, with a varied layout. An innovation for the housing construction of the capital was the elements that emphasize the high class of proposals from the developer: warm floors,

apartment area from 41 sq.m. up to 355 square meters, with a comfortable ceiling height of 3 meters, improved sound insulation. The developer positions some residential sections as an office space – a space suitable for work and living at the same time.

For the first time in the Kazakhstan market, Highville Astana introduced modern approaches of Western management in housing construction: apartments appeared completely ready for living, which included designer renovations, furniture, built-in household appliances; smart home system; built-in and controlled air purification equipment. The residential complex uses an extensive security system: video surveillance in elevators, playgrounds, checking visitors at the entrance, access system for cars, urgent call buttons, modern intercoms with digital locks and etc. The spatial environment of the complex was designed and built taking into account the availability of the environment for the category of low-mobility groups of the population (people with physical problems, the elderly, people with strollers, etc.). Thus, the «Highville Astana» residential complex demonstrates a qualitative breakthrough in architecture based on new technologies for understanding the internal and external environment of a home.

The residential complex «Lazurny Kvartal» with apartments of the III category of comfort, overlooking Bayterek, is located on the Left Bank, in the Esil district [3] (Fig. 2).



Figure 2 – Residential complex «Lazurny Kvartal» [photo by K.E. Taby نباева]



Figure 3 – Residential complex «Vremena Goda» [photo by K.E. Taby نباева]

The complex consists of 4 monolithic gas-block high-rise buildings – one 14-storey building and three towers with a height of 21, 23, 24 floors. The finishing was porcelain stoneware, a blue stained-glass profile on aluminum rods; internal partitions between apartments are made of aerated concrete, the thickness of the external walls is 56 cm.

Residential complex «Vremena Goda» is a comfort-class housing complex in the area of the Left Bank, located in the square of Kabanbay Batyr and Zhanibek streets (Fig. 3). It was raised by the largest developer in the country - BI Group, which also built residential complexes «Triumphal Arch», «Premiera» and others. Nine-

storey high-rise buildings are made of monolithic reinforced concrete, the outer walls are brick, the facade is finished with ceramic tiles «Greaton». The interior partitions are made of bricks and aerated blocks, which provide good sound insulation. The residential complex itself consists of four blocks – «Autumn», «Winter», «Spring» and «Summer», the facades of which are decorated in the theme of four seasons.

The residential complex «Promenade Expo» is located in the left-bank part of Nur-Sultan, on both sides of Orynbor Avenue, in close proximity to the EXPO-2017 exhibition complex [4] (Fig. 4).



Figure 4 – Residential complex «Promenade Expo» [photo by K.E. Tabyntbaeva]



Figure 5 – Residential complex «England» [photo by K.E. Tabyntbaeva]

«Promenade Expo» consists of 4 blocks, including 5-18 storey residential buildings, parking, administrative facilities, shops and other trade and service infrastructure. During the construction of the residential complex, the ventilated facade technology was used - breathable walls using ceramic tiles from a German manufacturer, retaining heat and preventing the appearance of dampness [5].

The residential complex «England», built by the corporation «BAZIS-A», is located on the right bank of the Ishim along Nazhimedenov Street, between Tael-sizdik Avenue and Kaldayakov Street (Fig. 5). The development area is within walking distance of such objects as the Palace of Peace and Reconciliation, the Museum of the History of Kazakhstan, the Shabyt Palace of Creativity, the Independence Palace and the Kazakh Eli memorial complex. The architecture of the 7- and 9-storey buildings of the residential complex creates the atmosphere of a modern English town, which ideally fits into the existing natural landscape. High pointed roofs with gables, darkened stained-glass windows and warm colors of decorative finishing of the facade create conditions for residents for a comfortable stay and protect from the city noise. In the spacious courtyards of the residential complex, there are modern children's playgrounds and sports grounds with cozy gazebos. The engineering equipment of the residential complex includes advanced technological developments in the field of ensuring the comfort and safety of residents.

The architecture of the considered residential complexes is distinguished by a high level of technological solutions, the use of innovative elements in providing an accessible, safe environment, and environmental friendliness of building materials and systems.

Conclusion

The study of modern residential complexes in Nur-Sultan shows that the architecture of the dwelling is a reaction to the socio-economic and aesthetic needs of the population and forms rather high requirements for the layout and quality of construction. The architecture of the considered residential complexes is distinguished by a high level of technological solutions, the use of innovative elements in providing an accessible, safe environment, and environmental friendliness of building materials and systems.

To ensure the unity of the architectural and spatial environment of the city, the development of Nur-Sultan is carried out by the method of complex development of the territory of each quarter by only one developer.

In the practice of housing construction, innovative technologies have begun to be widely used (the «smart home» system, video surveillance of the adjacent territory, etc.).

New residential complexes in the city of Nur-Sultan, as a rule, include various service facilities (kindergarten, supermarket, pharmacy, coffee shop, beauty salon, fitness club, medical center, etc.).

The spatial environment of residential complexes was designed and built taking into account the availability of the environment for the category of low-mobility groups of the population (people with physical problems, the elderly, people with strollers, etc.).

The methodology for the construction of new residential complexes in the capital of Kazakhstan is focused on the introduction of environmentally friendly and energy-saving principles in the design and construction of residential buildings (air purification control system, energy saving, collection and reuse of water, including rainwater) [6].

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ЗАМАНАУИ ТҰРҒЫН ҮЙ КЕШЕНДЕРІН ДАМУЫНДАҒЫ ИННОВАЦИЯЛЫҚ ТӘСІЛДЕРІ (НҰР-СҰЛТАН ҚАЛАСЫ МЫСАЛЫНДА)

Андатпа. Мақалада 1997 жылдан қазіргі уақытқа дейінгі кезеңдегі Нұр-Сұлтан қаласының тұрғын үй сәулеттің қалыптасу ерекшеліктері қарастырылған. Зерттеу барысында Қазақстан астанасының сәулетіне жаңа әлеуметтік-экономикалық, саяси және технологиялық факторлардың әсері анықталды. «Highvill Astana», «Azure Quarter», «Seasons», «Promenad Expo», «England» тұрғын үй кешендерінің мысалында әлемдегі ең жас астаналардың біріндегі заманауи тұрғын үйдің сәулеттік-жоспарлау ерекшеліктері көрсетілген.

Түйін сөздер: тұрғын үйлер, заманауи тұрғын үй сәулеті, тұрғын үй кешені, Нұр-Сұлтан қаласының сәулеті.

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ИННОВАЦИОННЫЕ ПОДХОДЫ В РАЗВИТИИ АРХИТЕКТУРЫ СОВРЕМЕННЫХ ЖИЛЫХ КОМПЛЕКСОВ (НА ПРИМЕРЕ ГОРОДА НУР-СУЛТАН)

Аннотация. В статье рассмотрены особенности формирования жилищной архитектуры города Нур-Султана за период с 1997 года до настоящего времени. В ходе исследования определено влияние новых социально-экономических, политических и технологических факторов на архитектуру столицы Казахстана. На примере жилых комплексов «Хайвилл Астана», «Лазурный квартал», «Времена года», «Promenad Expo», «England» показаны архитектурно-планировочные особенности современного жилища в условиях одной из самых молодых столиц мира.

Ключевые слова: жилые здания, архитектура современного жилища, жилой комплекс, архитектура г. Нур-Султана.