

## INFLUENCE OF URBANIZATION OF CITIES ON THE SYSTEM OF DEVELOPMENT OF PARKING LOTS AND MULTI-STOREY PARKING LOTS

*Irina Vagifovna Gabibova*

*PhD in Architecture, Acting associate professor  
YEODJU Technical Institute in Tashkent,  
Department of Architecture and Urban Planning,  
Tashkent, Uzbekistan*

**Annotation.** The article deals with the placement and construction of various types of parking lots. The main factors hindering the successful resolution of the parking problem have been identified. The lack of urban space determines the search for new non-standard solutions that make it possible to effectively use all available opportunities. The article provides a small overview of foreign experience in creating multi-storey parking lots. There are also some recommendations for the best possible solution to this problem.

**Key words:** Urbanization of cities, megalopolises, car, space, parking, car parking.

**Аннотация.** В статье рассматриваются вопросы размещения строительства различных видов парковок. Определены основные факторы, сдерживающие успешное разрешение проблемы с парковками. Недостаток городского пространства определяет поиск новых нестандартных решений, позволяющих эффективно использовать все имеющиеся возможности. В статье проведен небольшой обзор зарубежного опыта создания многоярусных парковок. Также приведены некоторые рекомендации по возможному оптимальному решению данной проблемы.

**Ключевые слова:** Урбанизация городов, мегаполисы, автомобиль, пространство, парковка, автомобильная стоянка.

**Annotatsiya.** Maqolada har xil turdagi to'xtash joylari qurilishini joylashtirish haqida so'z boradi. Avtoturargoh muammosining muvaffaqiyatli hal qilinishiga xalaqit beradigan asosiy omillar aniqlandi. Shahar maydonining etishmasligi mavjud bo'lgan barcha imkoniyatlardan samarali foydalanishga imkon beradigan yangi nostandard echimlarni izlashni belgilaydi. Maqolada ko'p qavatli avtoturargohlar yaratish bo'yicha xorijiy tajribalarning kichik bir ko'rinishi berilgan. Ushbu muammoni iloji boricha hal qilish uchun ba'zi tavsiyalar mavjud.

**Kalit so'zlar.** Shaharlarning urbanizatsiyasi, megapolislar, avtoulolvarlar, makon, to'xtash joylari, avtoturargohlar.

## **Introduction**

The rapid growth of urbanization of cities, and the actively growing population of megalopolises, lead to a widespread increase in the number of cars. At the same time, this rapid growth reduces the possibility of road transport network expansion. In conditions of limited space, urban infrastructure development including parking lots becomes very difficult. It becomes especially problematic to solve the problems of the urban structure in the conditions of the already existing building of the city. Due to the outstripping growth rates of the population's cars over the provision of cars with parking spaces, the problem of free parking spaces is becoming acute. The rapid growth of urbanization of cities, and the actively growing population of megalopolises, lead to a widespread increase in the number of cars. At the same time, in the conditions of the existing development of cities and megalopolises, the possibility of expanding the road transport network is significantly reduced. In conditions of limited space, urban infrastructure development including car parks become very difficult. It becomes especially problematic to solve the problems of the urban structure in the conditions of the already existing building of the city. Due to the outstripping growth rates of the population's cars over the provision of cars with parking spaces, the problem of free parking spaces is becoming especially acute.

The acute shortage of land in cities, and especially in metropolitan areas, forces architects and designers to look for all possible ways to solve the problem. The experience of the world development of cities and megalopolises shows that the development of flat layouts is no longer relevant, and the latest solutions for urban space are formed vertically.

The complex structure of urban space, which includes residential, social and industrial structure, is being formed in a modern city in vertical planes, gradually mastering underground and aboveground levels. Modern technologies for the development of the city dictate the conditions under which the most rational solution for placing transport will be deepening underground and the so-called multi-storey parking. With dense residential and public buildings, it is quite obvious that the growth of parking spaces can only proceed vertically.

Parking is gradually becoming a structural part of residential, public and industrial buildings. Today, in fact, every facility under construction requires a parking lot.

Scientists from many countries of the world have studied the problems of parking spaces and their placement in the structure of the city at different times. Many authors, assessing the world situation, directly recommend the formation of underground urban space, solved in conjunction with urban utilities, industrial and residential buildings.

For example, B. Skupov's article "Deeper, deeper and deeper. The strategy of innovative development of underground urban space ", directly indicates that at the present stage, the strategy for solving complex socio-economic and urban planning problems is carried out through the formation of the spatial structure of cities through the creation of multi-level and multifunctional urban formations with

maximum vertical development, with integrated use underground space according to a single urban planning plan, linked to the master plan of the city's development [10]. An assessment of the current situation, the development and implementation of various solutions can be seen in the work of I.A. Duvanova "Car parking lots and parking lots in megacities" [5]. The prospects for the development of car parks and parking lots are widely covered here. The author gives his vision and offers methods and options to improve this issue. In the work, a classification is made by types, definitions and purposes of parking, as well as a comparative analysis of various types of parking. Studying the foreign experience in the design and construction of parking lots, we can say with confidence that in many countries of Europe and America, the problem of providing people and cars with parking spaces is being solved comprehensively. However, many factors interfere with a successful solution to the parking problem. These are, first of all, urban planning, social, environmental and many other factors. But the main problem lies in urban planning factors, namely, that the existing urban development does not allow to significantly expand the road network, which creates difficulties with traffic on the roads and interferes with the formation of parking spaces. In urban planning, the problem of storing a car is one of the least studied. Moreover, all these difficulties are equally manifested in the central areas of cities and the periphery. Solving the problem of car parking is considered one of the most important tasks in ensuring comfortable living in modern cities. The minimum area for placing one car directly on the ground is approximately 25 m<sup>2</sup>, here passages are also taken into account.

With the modern density of residential and public buildings, these meters are truly priceless. In this case, greening must also be taken into account. The landscape organization of the city is one of the main elements of the territory improvement. Therefore, taking into account all the factors, many architects and city planners recognize that multi-storey parking is one of the rational solutions that can properly organize and reduce the amount of parking space.

In addition, the constantly growing residential areas with multi-storey residential complexes and social infrastructure require a more careful approach to the study and placement of various types of parking lots. Considering the current state of parking spaces and territories, it is safe to say that the current design and construction practice does not meet the growing needs for the placement of personal cars, and also largely does not correspond to urban planning standards for placement. Everywhere, open-type car parks, as a rule, are flat, sometimes they are formed under makeshift canopies without observing the standard distances to residential buildings. There are a lot of parking lots, right on pedestrian sidewalks and open areas that are not intended for cars. Therefore, with such a growth rate of road transport, it is the multi-tiered underground and aboveground parking lots that could, to some extent, save the situation and correct the existing situation.

Therefore, it is quite logical that in solving this situation, additional research is needed on the integration of multi-storey parking lots into the residential environment. Moreover, it is necessary to assess the effectiveness of various types of parking to develop criteria for this assessment following the transport and

planning structure of the city. These issues in combination with urban planning social and other factors are highlighted in the work of Voropaev L. "Principles for the design of parking lots in residential complexes." [4]

As the author notes, given the current level of motorization, open parking lots cannot meet the needs of residents of a residential building for the temporary storage of vehicles. There is a need to design new types of parking lots that provide a high degree of compactness when located near a residential complex. The increase in the distance from the dwelling to the parking lot, in addition to discomfort for residents, leads to an increase in the road network and utilities. [four] Based on the study of the totality of all factors such as the climatic factor, the factor of explosion and fire safety, the factor of the intensity of the use of parking lots, sanitary and hygienic, economic and urban planning factors, he formulated the principles of designing parking lots built into residential complexes. Based on the theoretical and practical study of the problem of storage of vehicles, various typological solutions for parking lots are proposed. Another author, E.B. Ryabkova in her work "Designing multi-storey garages and parking lots", conducted research that shows that when parking a car on the ground, the area per storage place is 25 square meters. m (with driveways), on two levels - 15 sq. m, in three - 10 sq. m, in four - 8 sq. m, in eight - 4-5 sq. m. The most rational are multi-storey parking garages, in which one storage place accounts for less than 2 square meters.

Multi-level parking lots are considered the most effective way to solve the problem of storing vehicles, in large quantities, in a small area. A parking project must take into account many factors that influence the formation of the living space and territory that the parking will serve. Construction of a multi-storey car park is undoubtedly a complex process that is solved in conjunction with other factors. At the moment, several types of multi-storey parking are considered effective, among which automated parking stands out. Such parking lots allow you to place a relatively large number of cars in a small area, significantly saving expensive land. In any case, the issue of building parking lots remains relevant in all cities of the world.

#### **Literature and collections:**

1. Ayukasova L.K. "Fundamentals of the design of passenger car service stations." Tutorial. - Orenburg: GOUOGU, 2003 - 106 p.
2. Adamovichus V., Shestokas V., - "Garages and parking lots". M.: Stroyizdat, 2004. 214 p.
3. Anderesen B. "Garages. Design and construction". Edited by prof. Otto Silla - M.: Stroyizdat 1986
4. Voropaev L. "Principles of designing parking lots in residential complexes". Dissertation for the degree of candidate of architecture. Moscow 2015. 182 PP.
5. V. Mestoks. Garages and parking lots: M.: Stroyizdat., 2001
6. Neufert - Civil Engineering. 38th edition revised and enlarged: - M publishing house "Architecture S", 2009 -560s

7. Ryabkova Y.B. "Design of multi-storey garages and parking lots." Khabarovsk 2014. 89 pages

8. Rozhina I.E. Architectural design of public buildings and structures: M.: Stroyizdat., 1995 458 - 471 p.

**Periodic publications:**

9. Duvanova I.A. "Car parks and parking lots in megacities". "Construction of unique buildings and structures". ISSN 2304-6295. 12 (39). 2015.43-56

10. Skupov B. "Deeper, deeper and deeper. Strategy for innovative development of underground urban space. "Urban planning, Development of regions M. 2015.