

## **STAGES OF FORMATION OF TRANSPORT AND PEDESTRIAN INFRASTRUCTURE OF THE CITY. POST-INDUSTRIAL PERIOD OF DEVELOPMENT**

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Urban environment gradually formed in the process of civilization development. The prerequisites for its formation appeared in the period of the original community system, based on ancient settlements, which were further improved and became the basis of urban development. Basically, cities emerged on the basis of a favorable transport and urban location connected with a trading function and resources availability.

Urban environment is currently a demo-ecosystem with a set of natural and anthropogenic components that form an environment for the life sustaining activities of the population. It is characterized by the occupied area, population, natural and anthropogenic elements of the landscape with the appropriate architectural and urban structure, which provides the basic functional processes of life sustainable activities in the urban environment. [1]

The interconnection of all objects of the life sustaining activities' environment is created due to the functioning of the transport and pedestrian infrastructure of the city, which was also gradually formed in the process of civilization development.

The analysis of the world experience of forming the transport and pedestrian infrastructure of the city revealed three stages of its historical development:

Stage I – pre-industrial period of development (from AD to the beginning of the XIX century);

Stage II – the industrial period of development (mid XVIII – mid XX century);

Stage III – post-industrial period of development (mid XX–XXI centuries).

During the post-industrial development of the urban environment in the mid-twentieth century, due to the total motorization, a demand arose for creation a safer environment for pedestrians. A number of developments came into existence. They include the improvement of road marking, introduction of traffic regulation systems at intersections, using fences, as well as creation of underground and ground parking lots.

For this purpose, the quarterly organization of the city was also abandoned. The housing estate became a structural unit of the residential area.

Transport entrances to residential buildings were made around the perimeter of the residential district, and its central part with the kindergarten and school became a pedestrian area.

The objects of transport and pedestrian infrastructure began to be created, namely, underground, ground and semi-underground facilities.

A rapid increase in the number of cars in cities also necessitated timely activities for the reconstruction of old and laying new transport highways, construction of roads of continuous traffic and reservation of territories for large land and underground parking lots for cars (designed for simultaneous placement of several thousand cars) near plants, factories, large entertainment enterprises, train stations, stadiums, beaches and other buildings and structures that attract large numbers of visitors. [2]

In the late 60's – early 70's of the XXth century, an interest arose in the organization, and often the restoration of the pedestrian systems. In many cities around the world, pedestrian streets and zones emerged.

But in the XXst century, transport and pedestrian infrastructure in the urban environment got increasingly complicated. Mass production of cars demanded conditions for creation of more perfect parking lots. A new type of structures appeared, namely, a parking lot with vertical parking. These structures became actively introduced into the transport and pedestrian infrastructure of major cities and significantly improved it.

Currently, automated parking are commonly available. The first automated parking lots were created in 1905 in France. At that time, high concrete structures were set in Paris, equipped with an internal elevator to move the machines to the upper levels. It is these structures that initiated the automated parking systems that now exist in many countries.

In the United States, the wave of interest in robotic parking was in the 1940s and 1950s, and in Europe, in the 60s and 80s. At that time, the process of constructing such structures was very slow, as it required considerable financial expenditures. [3]

Already in the early 1990s, practically every country in Europe and Asia began to construct up to 40,000 parking lots annually, which were distinguished by the technology of automation of lifting machines onto platforms.

Nowadays, automatic parking systems are entire complexes of multi-level parking lots in business centers or residential buildings.

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