



STAGES OF DEVELOPMENT OF THE CITY RAILWAY. HISTORY ANALYSIS

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Abstract: *This article provides a comprehensive historical analysis of the stages of formation and development of urban railway transport as an important element of urban infrastructure. The prerequisites for the formation of urban railways in the context of industrialization and the growth of the urban population, the features of designing and constructing the first lines, and the evolution of organizational and managerial mechanisms for the functioning of the system are considered. Special attention is paid to the transformation of urban railway communication in the XX-XXI centuries, the introduction of modern technologies, increasing the capacity and role of railway transport in ensuring the sustainable socio-economic development of cities. The article analyzes the historical patterns of urban railway development using the example of the world's largest transport systems, such as London, Paris, Berlin, and Tashkent, which allows for the identification of common trends and national characteristics in the modernization of the urban railway network. The strategic importance of urban railway transport in shaping modern transport policy and sustainable development of megacities has been concluded.*

Keywords: *city railway, development stages, historical analysis, urbanization, transport infrastructure, metro, industrialization, modernization, socio-economic development, sustainable transport.*

The problem of public transport in any large city is one of the most acute. It always brings much worry and trouble to the fathers of the city. This was also the case in Tashkent, whose population in the early 60s exceeded one million people.

The city's borders were continuously expanding, and during its reconstruction after the devastating earthquake on April 26, 1966, many new microdistricts emerged, connecting with new tram, trolleybus, and bus routes.

The oldest and perhaps the most popular mode of transport in Tashkent was the tram, which turned 95 last year. In 1896, the Tashkent City Administration signed an agreement with the Belgian Joint-Stock Company to establish a tram station in the city. The Konka was a two-story wagon with an open top, carrying a pair of horses driven by a forester on the rails. The Belgian joint-stock company "Tashkent Tram" spent five years laying the first tram line from the railway station to the old city market. It was opened on March 30, 1901[1]. The second line was built in 1903 from Romanovskaya Street to Lagerny Prospekt (now Pushkin Street). Its length was slightly more than nine kilometers, with a fleet of 30 wagons and 230 horses. In 1913, all conical railway lines were switched to electric traction. Thus, a tram appeared in Tashkent. After five years, the length of its route was already 23 kilometers [2].

The elderly well remember these rumbling wagons, rushing through the city streets with almost continuous bells. They remained etched in memory, always overflowing with children hanging on the steps. They were also remembered by the joyful feeling of having managed to wait for the tram and get into it. After all, until the forties, it was the only mass type of urban transport.

During the pre-war years, buses and buses ran along the streets. However, they were so few that they had no significant importance in urban transport. In 1926, seven buses were put on the line, the largest of which was the 40-seat Benz-Gagenau bus. Only in the post-war years did the first domestic multi-seat ZIS-154 buses arrive in Tashkent, initiating mass passenger bus transportation. And in 1947, the first trolleybus was launched along the route of the railway station - Eski Juva[3].

Over the years, the city continued to grow, its population grew. Simultaneously, tram lines, bus and trolleybus routes were extended. However,

during "peak hours," it became especially clear that to solve the transport problem, it was necessary to look for other, new ways. And then, in the speeches at the sessions of the city council, in the notes of economists' plans, in the prospective sketches of architects, on the lips of many residents of the city, the word "metro" began to sound more and more often.

Passengers consider the metro to be the most convenient, fast, and safe mode of urban transport. Specialists explain the popularity of the metro with its high capacity, reliability and accuracy of train movement, ensured by the latest automation systems, clarity, high level of passenger service culture, strict order at stations and trains. And everyone agrees that the metro is the most modern type of urban transport.

The history of the metro spans more than one hundred and thirty years. The world's first underground railway was the London Subway, which opened its service in January 1863. Its first line was built by the Metropolitan Company (in translation - the Capital). The company's name perfectly matches the name of the new type of public transport. At that time, the railway had already gained recognition and transported passengers and cargo in many countries of the world. Therefore, London lawyer Charles Pearson's proposal to build an underground city railway found ardent supporters. The idea was implemented in an unprecedentedly short time for that time - in less than four years. On the first line of Pedington - Fedington Street with a length of 6.5 km, locomotive traction was used as the most advanced for that time[4].

The operation of the subway was significantly complicated by heavy smoke, and removing smoke from the tunnels was one of the most difficult problems. Separate areas were built openly, and where this was impossible, ventilation hatches were installed in large quantities. Despite these inconveniences, the first metro showed enormous advantages over ground transport and began to develop rapidly. For 27 years, the subway was operated on locomotive traction, and only in 1890 was the underground mainline converted to electric traction[5].

The construction of the London Underground was mainly carried out in an open manner. The first section, built in a closed manner, was constructed in 1870 according to engineer Burrow's design. For tunneling, a cylindrical drilling rig was used, with a casing made of cast iron tubing assembled on threaded connections. Tubing got its name from the word "tube" (pipe). The cylindrical shape of tunnel excavation shields, created in those times by engineer Greyhead, is still widely used today in various shield modifications during the excavation of deep-seated tunnels. At the end of the 40s of our century, reinforced concrete tubing with bolted connections also found wide application in metro construction.

In Russia, in 1902, the American engineer Goff investigated the possibility of building an underground railway in Moscow. The proposal for construction was rejected by the State Duma, in particular, out of religious considerations. A similar fate befell the projects of the Russian engineer P. Balinsky on the construction of high-speed subways in Moscow and St. Petersburg. The Moscow City Duma issued a resolution: "Mr. Balinskiy shall be denied his harassment." By this time, 9 subways had already operated in the countries of Europe and North America.

In 1912, the State Duma considered and approved a new project for the construction of the Moscow Metro. It was proposed to build three lines: from Smolensk Market to Kalanchevskaya Square, from Vindavskaya (Riga) Station to Serpukhovskaya Square, and from Tverskaya to Pokrovskaya. The implementation of the project was hampered by the First World War. In 1919, the idea of building a metro in Moscow was approved, and by 1922, a project for the construction of a metro was developed. Its implementation was hampered by the economic difficulties of the transition period and the lack of personnel.

On June 15, 1931, a decision was made to begin the construction of the Moscow metro from Sokolniki to the Culture Park with a branch to Smolenskaya Square. On December 10, the first mine of Metrostroy was laid on Rusakovskaya Street, and in the spring of the following year, construction of the Moscow Metro

began along the entire route of the future line. In February 1932, work began on the creation of metro cars at the Mytychyn Machine-Building Plant, and in January 1935, the construction of the first 40 cars was completed[6].

On February 5, 1935, the first test train traveled along the entire route from Sokolniki station to Culture Park station and along the branch to Smolenskaya Square station. On May 15, a regular four-car train service began. The length of the first stage was 11.6 km. The line included three radii: Kirovsky, Frunze, and Arbatsky, which were connected in the city center at the Oxochny Ryad station. In December 1935, the number of wagons in the train was increased to six. In the year the metro was launched, an average of 177 thousand people were transported daily. By 1935, about 20 subways operated in the world's cities. In addition to Europe and North America, the metro appeared in Latin America (Buenos Aires, 1911) and Asia (Tokyo, 1925).

In January 1941, the construction of the Leningrad metro began. With the beginning of the war, it was interrupted and resumed in 1945. On November 15, 1955, it was opened to passengers. The first 10.1 km line included 8 stations and the Avtovo depot. On November 6, 1960, the 5.2-kilometer Kyiv Metro with five stations opened. On January 11, 1966, the first section of the Tbilisi metro with a length of 6.3 km was commissioned. Preparations for the construction of the metro in Kharkiv have begun. On October 16, 1967, a test train passed through the first section of the Baku metro.

Thus, before the metro began operating in Tashkent, the metro operated in Moscow, Leningrad, Kyiv, Kharkiv, Tbilisi, Baku, and 30 other cities of the world. Later, construction began in Minsk (1977), Sverdlovsk (1980), and in 1981, the first stage of the Yerevan metro opened. At the end of 1985, the metro began operating in Gorky, Novosibirsk, at the end of 1987 - in Kuibyshev.

Currently, metro lines operate in nearly 100 cities across more than 30 countries. The largest in terms of length and number of stations are New York -

392.2 km, 474 stations; London - 387.9 km, 247 stations; Paris (with express lines) - 294.7 km, 423 stations; Moscow - 261 km, 160 stations; Tokyo - 197 km, 192 stations.

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