



## ANALYSIS OF THE TECHNICAL CONDITION OF THE 4R-173 KUNGRAD-MOYNAK HIGHWAY

**Hotamov Asadulla Toshtemirovich**

*Doctoral student (Ds) of Tashkent Architecture and Civil Engineering Institute Tel: +998 90 295 79 09 E-mail: [loyiha\\_ks@mail.ru](mailto:loyiha_ks@mail.ru)*

**Buranov Samandar Bakhtiyarovich**

*Theacher of Tashkent Architecture and Civil Engineering Institute Tel: +998 99 391 09 91 E-mail: [buranov8191@gmail.com](mailto:buranov8191@gmail.com)*

**Axmedov Shakhobiddinkhon**

*Magistrant of Tashkent Architecture and Civil Engineering Institute Tel: +998 99 871 72 82 E-mail: [akengerkules007@gmail.com](mailto:akengerkules007@gmail.com)*

Article history:	Abstract:
<b>Received:</b> 26 <sup>th</sup> February 2021 <b>Accepted:</b> 7 <sup>th</sup> March 2021 <b>Published:</b> 28 <sup>h</sup> March 2021	This article analyzes the technical parameters of the highway "Kungrad-Muynak" and offers suggestions for reconstruction based on regulatory requirements.
<b>Keywords:</b> Highway, road category, index, traffic speed, cross section, longitudinal section, slope, road elements, carriageway, footpath, normative requirements.	

### INTRODUCTION:

It is known that the roads of state importance are the roads that connect the population of the capitals of the Republic and the cities with a population of 100 to 500 thousand, and these cities with the administrative centers of the districts.

Public roads are roads that have a special index and number, which are included in a special list and approved by the decision of the Cabinet of Ministers. Roads in the Republic of Uzbekistan are indexed as follows: for example; A-372;

A-Roads of republican significance

P-Roads of regional, republican significance

K,H-Roads of district, local significance

4R-173 "Kungrad-Muynak highway" also has a special index and is a public road of national importance.

According to the data of the State Highways Committee of the Republic of Uzbekistan in 01.01.2020 here given detailed information about domestic roads, public roads, urban and rural roads which are situated in the Republic of Uzbekistan in the following table list [1].

Table 1

№	Regions	Total	Including:					Public highways
			City roads	Roads of district centres	Roads of rural settlements	Roads of urban settlements	Inter-farm highways	
	Throughout the republic	<b>159236</b>	<b>7126</b>	<b>12529</b>	<b>49383</b>	<b>15456</b>	<b>32066</b>	<b>42695</b>
	<i>Including:</i>							
1	The Republic of Karakalpakstan	11157	715	1194	1875	235	2925	4213
2	Andijan region	12525	1092	932	4530	2066	1442	2463
3	Bukhara region	13792	405	722	3946	1245	3373	4101
4	Jizzakh region	7727	355	360	1121	643	2648	2604
5	Kashkadarya region	18447	632	1441	6116	1442	5389	3427
6	Navaiy region	8061	81	459	3088	399	128	3917
7	Namangan region	13260	685	1205	3706	1746	2541	3377
8	Samarkand region	16043	655	917	6780	966	2635	4094
9	Surkhandarya region	12683	263	413	3769	1742	3653	2843
10	Syrdarya region	3842	310	147	1416	317	192	1460
11	Tashkent region	12650	368	1115	4108	1073	2031	3955
12	Fergana region	18856	1053	1011	7168	3193	2400	4031
13	Khorezm region	7813	228	517	1760	389	2709	2210
14	Tashkent city	2380	284	2096	0	0	0	

**MATERIAL AND RESEARCH METHODS:**

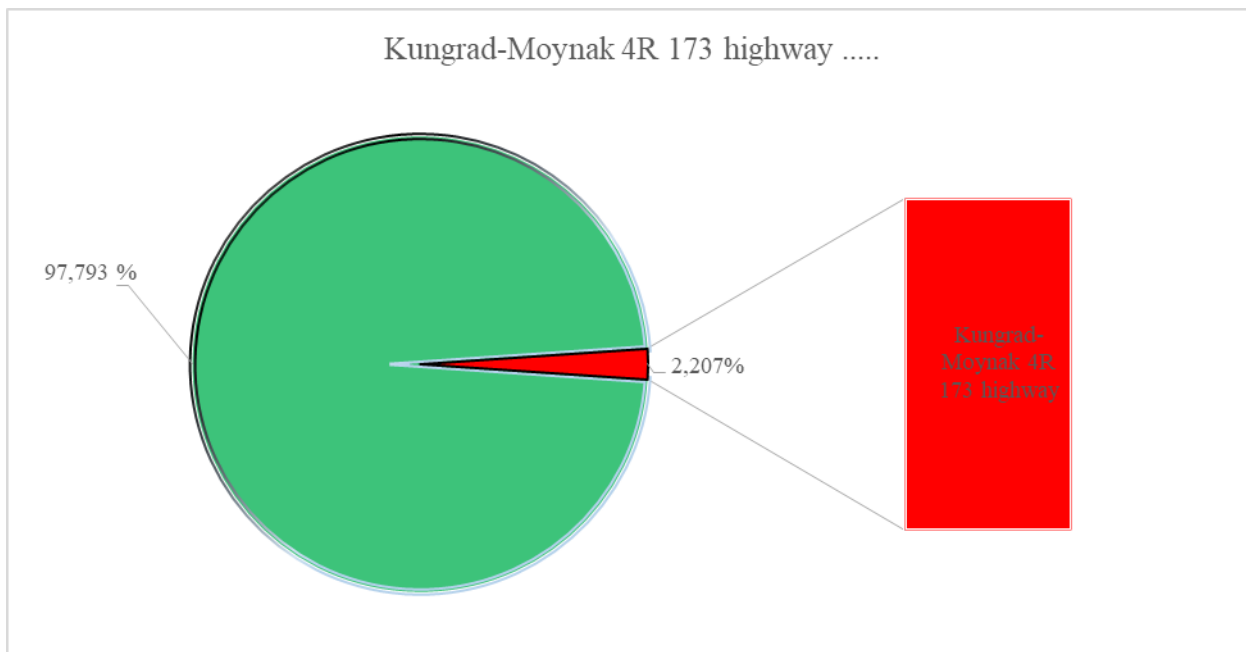
The category of the road is adopted depending on its assigned function and future traffic intensity. 4R173 The Kungrad-Muynak highway is of the following importance depending on the economic, administrative significance and function of the entire length of the road or its parts in accordance with SNQ 2.05.02-07 [2].

**Table 2**

Road class	Called	Defined by function and conditions of actions	Road category	Significance
1	2	3	4	5
	Local roads of state importance	Designed for the movement of various vehicles, taking into account traffic safety conditions. It unites large and small cities of the country, serves the movement between regional and district centers, highways, as well as highways of international importance. The need for transport links will be met due to the specifics of traffic in the region.	II	Local roads of state importance.

According to the data of State Highway Committee of the Republic of Uzbekistan in 2019, the total length of roads of national importance in Uzbekistan is 14,100 km. Of this, the Kungrad-Muynak highway accounts for 0.66%. The total length of public roads in the Republic of Karakalpakstan is 4213 km, which is the longest in the country. Of this, the Kungrad-Moynak highway accounts for 2.207%.

Highway 4R-173 is the largest national highway in Karakalpakstan and its share in the total number of public roads in the Republic of Karakalpakstan can be seen in the following diagram:



**RESEARCH RESULTS:**

The main elements of highways are mainly reflected in the transverse and longitudinal sections. The main dimensions of the cross-section of the footing and carriageway of the highway are accepted in accordance with SHNK 2.05.02-07, depending on the category and function of the highway. 4R173 "Kungrad-Muynak highway" is a category II highway with a width of 15 meters. The carriageway of highway has two lanes and the width of the lane is 3.75 m. Therefore, the width of the carriageway is 7.5 m.

The width of the roadside is 3.75 m. The width of the reinforced part of the roadside is 2 meters. It should be noted that the color and appearance of the pavement should be different from the pavement or separated by a dashed line [3]. The strength of the roadside must ensure that vehicles can move or stop in it.

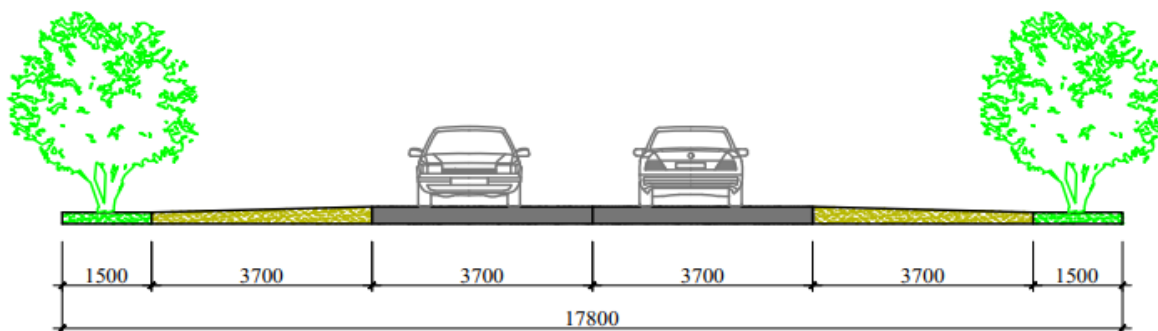


Figure 1. Current condition of the 4R-173 Kungrad-Moynak highway

During the reconstruction of the Kungrad-Moynak highway, first of all, its technical parameters will be studied, and engineering measures will be specified in the project. During the operation of the Kungrad-Moynak highway, if the flow of cars and tractors is formed in the rolling stock and the intensity of tractors is 150-200 tractors per day, the construction of additional lanes will be carried out due to the widening of the track [4]. The pavement structure and transverse slope of the additional strip shall be the same as that of the main road. When designing the longitudinal section of highways, special attention should be paid to minimizing the variation and limitation of the speed of vehicles, ensuring traffic safety and convenience. To meet these requirements, the maximum slope should not exceed, the viewing distance for stopping the car should be at least 450 m, the radius of curvature in the cross section should be at least 70,000 meters for bubble curves, at least 8,000 meters for concave curves, and should be at least 100 meters in concave curves. In the longitudinal section of the Kungrad-Moynak highway, the project line is designed mainly on a small elevation parallel to the ground, and in some parts of the road there are shallow pits. The longitudinal slopes of the project line fully respond to the requirements of the SHNK. At the fracture sites of the project line, vertical curves, i.e. bubble and concave curves, were designed, respectively, which also respond to the requirements of the SHNK. Alternatively, ditches are provided in the longitudinal section, which represent the soil types under the road. According to the normative documents, they are placed every 500 meters and their depth is up to 3 meters.

At the bridge crossings, wells will be drilled and the foundations of the bridge will be designed based on the information received.

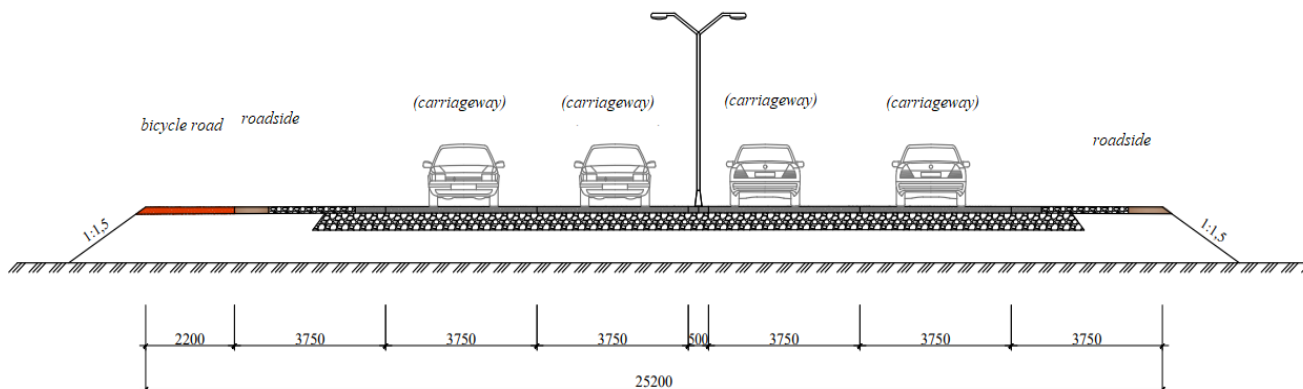


Figure 2. Proposal for the reconstructive cross section of the Kungrad-Moynak highway

**FINDINGS:**

In short, it is recommended to reconstruct the Kungrad-Moynak highway, where the car is being analyzed, depending on the future traffic volume. When changing the geometric parameters of the road, it is advisable to expand the carriageway by introducing bicycle lanes on the side of the road. It should be noted that the implementation of adequate measures for the establishment and development of tourism in Muynak district is reflected in the decisions of the Government of the Republic of Uzbekistan on the introduction of the necessary infrastructure.

**REFERENCES**

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