

ANALYSIS OF THE CURRENT STATE OF VEHICLE SAFETY PROBLEMS IN MOUNTAINOUS ROAD AREAS

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Abstract: This article presents the current problems and solutions for ensuring the safety of vehicles on the mountainous road sections of the internationally important M-39 highway in the Jizzakh region, between km 982-1012, the specific natural and geographical conditions of mountainous areas, and the many dangers that arise for vehicle traffic.

Key words: International highway M-39, road traffic accident, mountain road, transport, safety, road traffic accident, traffic safety, accident, injury, harm, speed, roadway, driver, car.

Аннотация: В статье рассматриваются актуальные проблемы и пути решения обеспечения безопасности движения транспортных средств на горных участках автодороги международного значения М-39 в Джизакской области на участке 982–1012 км, специфические природно-географические условия горной местности, а также многочисленные опасности, возникающие при движении транспортных средств.

Ключевые слова: Международная автомобильная дорога М-39, дорожно-транспортное происшествие, горная дорога, транспорт, безопасность, дорожно-транспортное происшествие, безопасность движения, несчастный случай, травма, ущерб, скорость, проезжая часть, водитель, автомобиль.

The motorization and development of the republic's economic sectors lead to a rapid increase in the intensity of freight transportation on mountain roads. In many cases, these roads do not meet the requirements of modern motor vehicles,

which leads to a decrease in transport efficiency and an increase in accidents. The specific features of road conditions in complex mountainous terrain have a significant impact on their transport and operational characteristics, the working conditions of drivers, and ensuring traffic safety. Uzbekistan is located far from the seas and oceans, in the subtropical zone of the northern hemisphere, and almost 4/5 of the country's territory is located in the vast deserts and semi-deserts of Central Asia. It borders on mountain ranges in the south and east. Mountainous areas occupy about 22% of the country's territory.

Today, ensuring the safety of vehicles in mountainous areas remains an urgent and important issue. The specific natural and geographical conditions of mountainous areas create many dangers for vehicle traffic. In particular, slopes, sharp turns, narrow roads, changes in altitude pressure and adverse weather conditions make it difficult to drive a car and further increase the risk of road accidents. The network of public roads in Uzbekistan is 42,654 km [3]. Of these, mountain roads account for about 5.7% (2,431 km) of the total road network. The mountain roads of international importance crossing the territory of our republic are the A-373 Tashkent-Osh road, 116-214 km, the Kamchik pass, the M-39 Almaty-Bishkek-Tashkent-Termez road, 1120-1145 km, the Takhtkaracha pass and 1302-130 km.

The internationally important M-39 highway crosses the territory of Jizzakh region for 939-1037 km, and 982-1013 km of this road are in mountainous areas. The highest point of the region is 600-700 m above sea level. Today, an average of more than 1,000 cars travel on this road per day. Of these, 400 are trucks, 500 are passenger cars, and 100 are buses. When analyzed, this figure is 30,000 per month and 360,000 per year. Given the traffic intensity of the M-39 highway, ensuring traffic safety on km 982-1012 and preventing and reducing the number of road accidents are urgent issues.



Figure 1. General geographical view of the M-39 road, 982-1013 km, passing through mountainous areas

The issue of road safety on mountain roads, 982-1013 km of the M-39 highway, is one of the most pressing problems today. There are a number of natural and technical factors that cause these problems.



Figure 2. Dangerous road sections at km 1011 of the M-39 highway

As can be seen from Figure 1.3, the main traffic accident zones are located at km 989, 993, 997, 1001, 1004, and 1011 in the Sharof Rashidov district, which is explained by the highest concentration of vehicles per kilometer.



a) sharp turn area appearance



b) sharp turn geographical

Figure 3. View of a narrow and winding road in a mountainous area

The natural conditions of mountain roads - dangerous turns, steep slopes and narrow roads - make driving difficult (Figure 3, a). Especially after rain or snow, road conditions become slippery, increasing the risk of skidding and loss of control (Figure 4).



Figure 4. Driving conditions on a snowy mountain road

Given the variability of weather conditions in mountainous areas, natural factors such as fog, snow, and heavy rainfall limit visibility and pose a significant risk to drivers. Adverse weather conditions also contribute to the occurrence of road accidents in these areas. In mountainous areas, it creates difficulties for freight and passenger vehicles. The risk is especially high when moving with a loaded load. When examining the steep and sloping slopes of the road and dangerous turning areas on the 991-1013 km of the M-39 highway, the average slope reaches 12°-16°.

The length of the mountainous areas (Long Peaks) is 22 km. The average value of ascents and descents on the roads in the mountainous areas is 80-90% of the route length. The indicator of dangerous turns on the road is 45°. The above indicators can cause traffic accidents for cars and further increase the level of complexity in driving.



Figure 5. Areas without protective barriers

In the above figure, areas without protective barriers are considered areas with a very high risk of falling and exiting from the slope. Such protective measures are not sufficient on all roads in these areas. Although there are barriers, some of them are outdated and in poor condition.

In conclusion, it can be said that by implementing the above-mentioned work, we can prevent and reduce the occurrence of road accidents, the death of citizens, damage to their health, damage to vehicles, structures, cargo, and other material damage. Of course, for this, every employee, driver, and citizen assigned to these tasks must approach them responsibly. Because this situation is a matter related to human life.

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