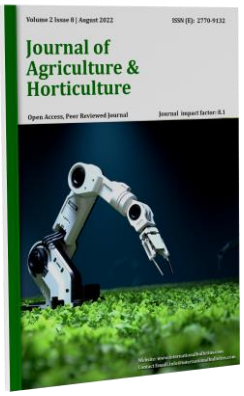

METHODS FOR SECURITYOF RAILWAY TRACKS AND ITS OBJECTS IN EMERGENCIES OF A NATURAL CHARACTER (DURING MUDFLOW AND LANDSLIDE PHENOMENA)

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ANNOTATION:
This article provides information on the strengthening of transport security in recent years. Transport security has become one of the most pressing problems worldwide. Especially railway transport communications have always been and will be a high-risk area. Today, the creation of an increasingly ramified and complex transport infrastructure requires solving security problems and is of particular importance, since it is an essential element of modern civilization as a whole.
Keywords: Danger, mudflows, landslides, mudflow, transport, road, danger.
АННОТАЦИЯ:
В данной статье даётся информация по вопросам укрепления транспортной безопасности за последние годы. Транспортная безопасность вошли в число самых актуальных проблем во всем мире. Особенно железнодорожные транспортные коммуникации всегда были и будут зоной повышенного риска. Сегодня создание все более разветвленной и сложной транспортной инфраструктуры требует решения проблем безопасности и приобретает особое значение, поскольку является важнейшим элементом современной цивилизации в целом.
Ключевые слова: Опасность, сели, оползни, селевой поток, транспорт, дорога, опасность.

At the present stage of development of society and the economy, the increasing role of the transport sector is characteristic. Being a system-forming development factor, transport has an active influence on the state of economic, political, social, military, technological and other components of national security. The national security of the Republic of Uzbekistan essentially depends on ensuring transport security. The issues of strengthening transport security in recent years have become one of the most pressing problems around the world. Transport communications have always been and will be a high-risk area. Today, the creation of an increasingly ramified and complex transport infrastructure requires solving security problems and is of particular importance, since it is an essential element of modern civilization as a whole.

The problem of transport security is inextricably linked with the problem of life safety and the survival of the world community, since they are the main reason for the existence of mankind.

Security, as such, should be considered as a complex system, which includes components from different spheres of human activity, society, the state and the entire world community. According to representatives of science, politics, education studying economic, medical, food, biological, military security - all this in the scientific sense should be interpreted as systemic security. Transport safety is not an exception, and a scientific and methodological approach should be developed for its study on a formalized basis, allowing to give and predict a quantitative assessment of danger-safety. There should be a unified methodology, scientific, methodological and analytical apparatus, which would be the basis for use in various fields and branches of activity of researchers, engineers, technologists and practitioners.

In the last two decades, publications on security issues have appeared in our country and abroad, indicating that scientists and practitioners are interested in this field of science in the ideas of the processes of creation and development of security theory, and above all on a mathematical fundamental basis. There is a shift in emphasis in the study of methods for assessing the influence of external factors on the causes of disasters, accidents and incidents. It is proposed to forecast the danger of incidents in advance. Therefore, one of the main directions in recent years has been the use of the method of managed risks. In transport, the concept of "risk management" has not yet been sufficiently studied and researched. Prominent scientists of the Republic conducted their research in this area.

The active measures to ensure the safety of the railway in suitable and mountainous areas are to establish a safety management system, the purpose of which is to maintain the protection system. The created security maintenance system should control the state of the object and the environment surrounding the object, and thus the principle of protection will be implemented. Picture 1.

Figure 1. Debris protection devices

The relevance of the problem of railway safety from emergencies lies in the fact that the technological space is currently poorly structured, because it is not always possible to manage the technology process due to the strong impact on it of making a profit in production, competition, etc.

In this regard, the technological space is poorly organized. With his created technological potential, a person is not able to influence the development of natural and man-made disasters, and therefore manage them. An unmanaged technological space is dangerous,

since its lack of structure reduces the possibility of predicting its development, and hence its management. It follows from this that technological development must be introduced into a manageable corridor.

The fact that security and especially system security is especially important and relevant is evidenced by the adoption in the Law of the Republic of Uzbekistan called "Law on Civil Protection". Security is defined in the law: "as the protection of the vital interests of the individual, society and the state from internal and external threats." The law optimally represents the objects of protection - from the individual through society to the political system. Threats are regarded as factors that endanger the vital interests of a person, the state, and society. In general, the law contains methodological formulations that make it possible to build a state legal mechanism for ensuring security. Figure 2.

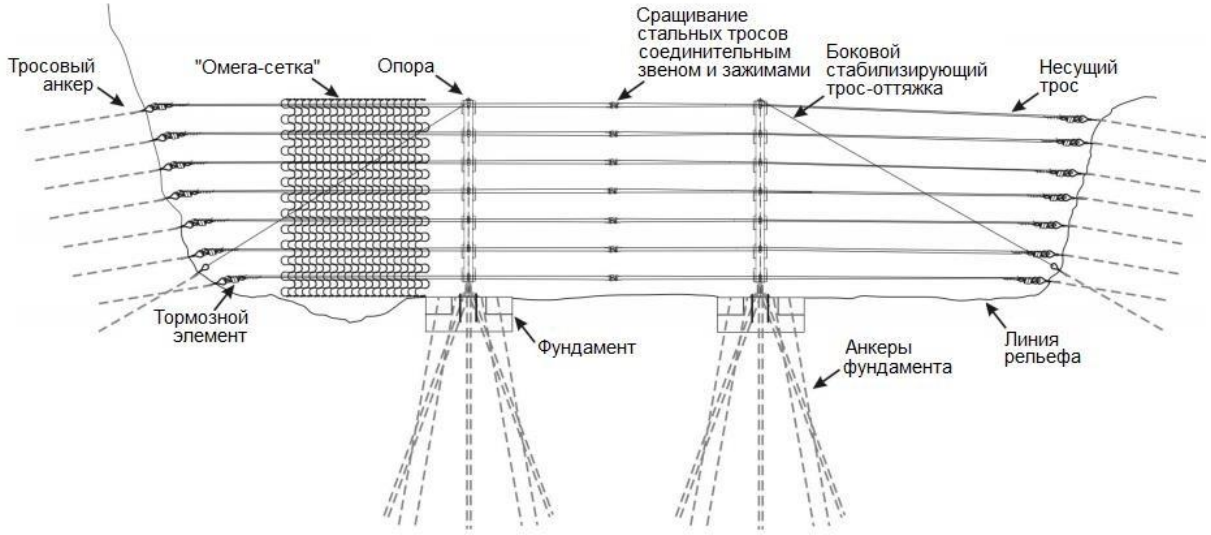

Figure 2. Modernflexible anti-mudflow barrier

Nevertheless, the law is a declarative document, leaving a wide field of activity for concretization and scientific substantiation of the proposed proposals or postulates.

The preservation of the security space, reflected in the law, requires the definition of the concept of "systemic security", which should include all types of danger, such as state, military, economic, social, financial, environmental, legal, scientific and educational, personal, agricultural, medical biological and, of course, transport.

Each of the listed dangers is based on its own functional model, reflecting the professional side of the system functioning, and should be built according to a hierarchical principle from a large scale to a personal one.

Despite the different content (professional) of the listed hazards that make up system security, their formalized description can be carried out using a single methodological approach. The use of such an approach in the analysis of hazards makes it possible to establish general patterns of occurrence of hazards, regardless of their functional affiliation. The security property allows the object to be reliably protected from dangerous influences.

I would like to emphasize that the opinion about the equivalence of security and reliability of the system is not entirely correct. Reliability is determined by probabilistic indicators that characterize the system's response to failure, i.e. an event that consists in a violation of the system's operability due to changes in its parameters, sudden or gradual failures.

It is known that the mechanism of reliability theory is as follows. According to the statistical characteristics of the failure of elements, the system reliability indicator is determined in the form of a function that describes the system's performance in case of failures. This dependence allows you to recalculate the initial data into the resulting criterion.

The theory of reliability is based on an event as a one-time act that allows, in the case of multiple repetitions, to determine the probability of its consequences.

The fundamental principle of safety theory is that it is unacceptable to proceed only from the multiplicity of phenomena that have dangerous consequences. One catastrophe is enough to destroy the system. System security is based on the need to monitor dynamic processes, and not just control individual events.

It follows from the above that, methodologically, the theory of security is wider than the theory of reliability; therefore, it will be used to study individual aspects of security.

In the theory of systems safety, when studying the risks of crashes, accidents, catastrophes, it becomes necessary to search for other methods for assessing danger or safety outside the framework of reliability.

At the same time, the concept of risk as the probability of danger with damage was adopted several decades ago in the theory of reliability. At present, the interpretation of risks, especially manageable ones, is based on the concepts of chains of events and their various measures, not only probabilistic. Figure 4

Figure 3. Usefully dangerous places on the railway track

Angren - Pap.

To ensure the safety of the railway in mudflow and landslide-prone areas of the Republic, it is necessary to substantiate effective methods and means to improve the safety and stability of the operation of railway transport in emergency situations (mudflows and landslides in mudflow-prone areas).

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