World Bulletin of Social Sciences (WBSS)
Available Online at: https://www.scholarexpress.net
Vol. 20, March,2023
ISSN: 2749-361X

FEATURES OF THE PROTECTION OF THE RAILWAY AND TERRITORIES IN MOUNTAIN AND STEPPE REGIONS OF UZBEKISTAN

Abdazimov Shavkat Khakimovich
Ph.D. docent.
Associate Professor of the Department "Technospheric Safety" of the Tashkent State Transport University.
Tashkent city. The Republic of Uzbekistan.
abdazimov_sh@mail.ru
Yuldasheva Nargiza Patkhullaevna
Senior Lecturer
Senior lecturer of the department "Technospheric safety" of the Tashkent State Transport University.
Tashkent city. The Republic of Uzbekistan.

Article history:
Received: 1st January 2023
Accepted: 1st February 2023
Published: 6th March 2023

Abstract:
The most common natural hazards in mountainous areas are earthquakes, mudflows, landslides, landslides, and snow avalanches. For the steppe regions, hurricanes, storms and tornadoes, snow drifts are most characteristic

Keywords: earthquakes, mudflows, landslides, landslides, and snow avalanches, natural hazards in mountainous

The most common natural hazards in mountainous areas are earthquakes, mudflows, landslides, landslides, and snow avalanches. For the steppe regions, hurricanes, storms and tornadoes, snow drifts are most characteristic.

Let's consider the main ways of engineering protection of territories from the negative impact of these natural phenomena.

The most reliable way to mitigate the catastrophic effects of earthquakes is the use of earthquake-resistant building structures. Experience shows that during destructive earthquakes, the main destruction occurs in houses built without considering seismicity, while properly built houses (including skyscrapers) are able to withstand strong tremors.

It is possible that a promising way to prevent the devastating consequences of these natural disasters will be artificial earthquakes caused by underground explosions in order to "release" the emerging stresses in the earth's crust before they reach dangerous values.

For engineering protection of territories from mudflows, a whole range of measures is carried out aimed at reducing or eliminating the mudflow hazard. In a general sense, these measures are aimed at regulating (managing) the mudflow process. The direct objects of regulation are the mudflow, the mudflow basin and human economic activity in mudflow-prone areas.

Measures of engineering protection against mudflows are usually divided into three main groups.

1. Technical measures - construction of anti-mudflow structures, in order to localize or change the exit path, stop the flow with the help of dams, canals, dams, etc.

Recommended Materials

2. Ameliorative measures - melioration of mudflow basins in order to regulate surface runoff. The main methods are afforestation and terracing of slopes, preventive descent of lakes, etc.

3. Organizational and economic measures - regulation of economic and other activities in mudflow hazardous areas. This group includes measures (laws, decisions of local authorities, etc.) aimed at maximizing the preservation of forest cover on mountain slopes, limiting the load on mountain pastures, etc.

The best results are obtained by a combination of all groups of protection measures, especially technical and reclamation measures.

The main purpose of anti-mudflow engineering structures is a direct impact on a moving mudflow in order to limit the zone of its harmful effects or stop it.

According to the main purpose, anti-mudflow structures are divided into three classes - regulating, delaying, stabilizing.

Regulating engineering structures - dams, mudflows, mudflows, mudflow channels, mudflow barriers, etc. serve to divert, change the direction of movement, localize or pass the flow above or below the protected object.

Delaying engineering structures - mudflow retention dams, mudflow storages, nano-catchers - are designed to stop the entire mudflow mass or most of the solid component of the flow.

Stabilizing engineering structures - a system of low retaining dams along the mudflow channel - transform its longitudinal profile into a stepped profile with smaller slopes, which prevents the formation of mudflows.

In addition, in the channels of mudflow and non-mudflow mountain streams, the simplest structures

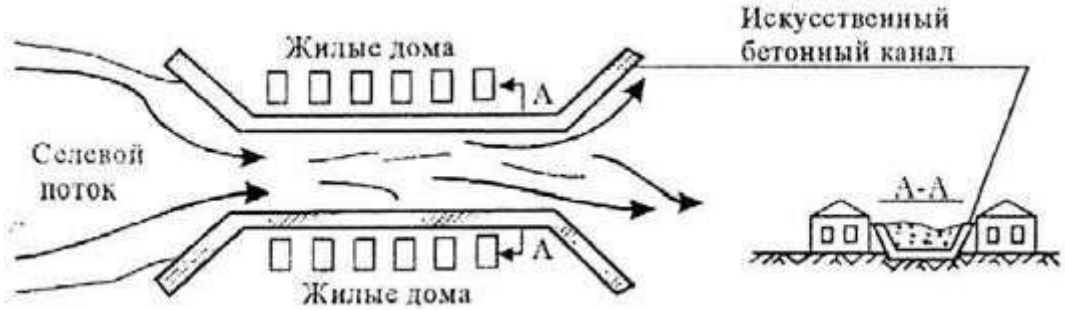
World Bulletin of Social Sciences (WBSS)
Available Online at: https://www.scholarexpress.net
Vol. 20, March,2023
ISSN: 2749-361X

are built to prevent deep and lateral flooding of the channel - bank protection walls, blind areas, bottom dams.

The mudflow is a reinforced concrete flume that continues the mudflow channel above the protected linear object - the bed of a railway or highway, a canal; serves to pass small mudflows. To ensure transit traffic, the slope of the flume must be equal to or greater than the slope of the natural channel in the approach section, its width should correspond to the average width of the mudflow, and the height of the walls should exceed the maximum depth of the stream by 0.2. Mudflow flow diagram is shown in fig. one.

Rice. 1. Selespusk

The mudflow channel is a canalized channel with artificial sides made of reinforced concrete, reinforced concrete slabs or masonry. It serves to pass mudflows through settlements or industrial enterprises. The height of the mudflow canal walls should exceed the maximum flow depth by 0.2. Mudflow passage channel scheme is shown in fig. 2.



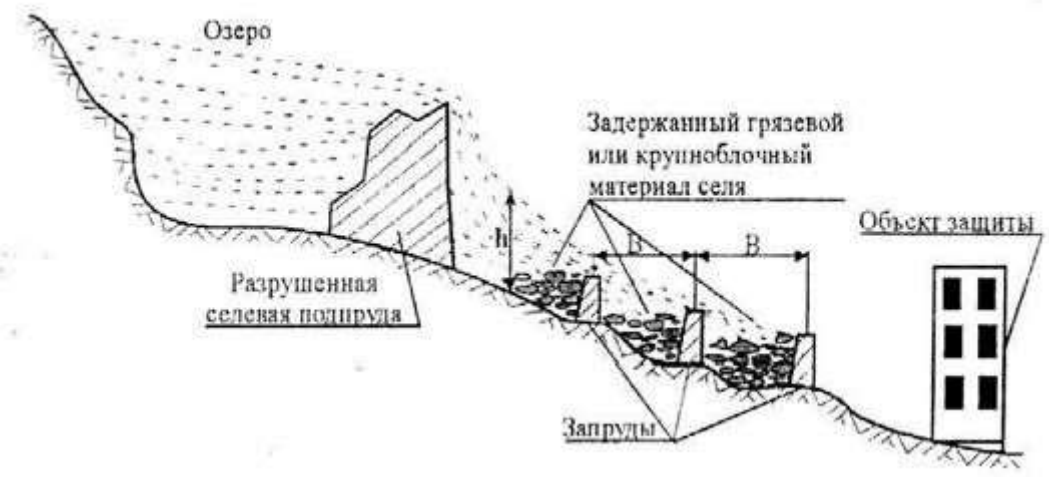
Rice. 2. Mudflow channel

Mudflow-retaining dams are designed to stop the mudflow, accumulate its solid component and organize the discharge of the liquid component of the mudflow and domestic runoff of the river. Mudflow-retaining dam structures can be massive - made of concrete, reinforced concrete, masonry, soil materials - or through (lattice) assembled from reinforced concrete or steel parts. The height of the mudflow-retaining dam, depending on the volume of debris flows, varies from 10 - 15 to 100 - 150 m. It is calculated in such a way as to ensure the complete accumulation of clastic material removals by the mudflow of the accepted design probability. The fragmental material of the mudflow, deposited in the mudflow storage at the headwater of the mudflow-retaining dam, requires periodic cleaning. The mudflow-retaining dam is being built both as the sole or main means of protection, and in combination with other types of structures and land reclamation.

A mudflow storage is a section of a valley in a mudflow basin near the headwater of a mudflow-retaining dam, on which the detrital material of mudflow drifts is concentrated. To maintain the capacity of the mudflow storage, its periodic cleaning is required; to increase this capacity, a pit is sometimes dug at the site of the mud storage. In some arid regions, mudflow reservoirs are also used as reservoirs, combining their functions.

Retaining dams are low (2-10 m) dams - massive (made of concrete or masonry) or through (assembled from reinforced concrete or steel structures). The scheme of mudflow protection dams is shown in Fig.3.

World Bulletin of Social Sciences (WBSS)
Available Online at: https://www.scholarexpress.net
Vol. 20, March,2023
ISSN: 2749-361X



Picture. 3. System of mudflow protection retaining dams:
h is the mudflow height;
B - distance between retaining dams:
B £ 120 m - at h = 3...5 m and debris size more than 0.5 m;
B £ 60 m - at h = 1.5...3 m and debris size up to 0.5 m;
B £ 40 m - at h = 1.0...1.5 m

Retaining dams are the most widespread type of anti-mudflow structures. Single retaining dams are sometimes built in order to partially delay the solid component of the mudflow in front of the mudflow facility, small groups of them are built in low- and medium-active mudflow basins and in addition to terracing and afforestation of slopes. In the vast majority of cases, a system of retaining dams is erected, including dozens of separate structures located along the entire mudflow channel, from the upper reaches to the alluvial fan. Dams, located at a distance of 40-120 m from one another, transform the longitudinal profile of the channel into a stepped one. The distances between dams are calculated in such a way that the slope of the laid out step was close to equalizing, at which the erosion of the channel stops. Thus, the system of dams, unlike single structures, affects the course of the mudflow process, significantly reducing or completely eliminating the mudflow activity of the basin.

Reclamation of mudflow basins is aimed at changing the conditions of mudflow formation in order to reduce mudflow activity. The object of regulation is surface runoff as the most important factor in the formation of mudflows.

The most common methods of reclamation of mudflow basins are:

afforestation and greening of slopes in order to reduce surface runoff and convert part of it into groundwater;

slope terracing;

creation of reservoirs in the upper reaches of mudflow basins in order to cut the peak of floods (reduce the maximum flow of water in the river);

construction of upland canals and storm drains in order to intercept surface runoff and safely discharge it into the channel network below the mudflow formation zone;

preventive descent of lakes.

Reclamation of mudflow basins is most effective in combination with anti-mudflow structures in the channel.

Slope terracing is the creation of steps (artificial terraces) on the slopes for better use for agricultural and forest crops, as well as to combat water erosion. Terracing of slopes in mudflow basins in combination with tree and shrub plantations is one of the effective ways to regulate surface runoff and reduce mudflow activity. Terraces are cut on slopes with a steepness of up to 35 °; their width is not less than 3 m. The distance between the terraces depends on the steepness of the slope and the condition of its surface; as a rule, it is tens of meters. The terraced slope practically does not give surface runoff and absorbs flat washout of fine earth during heavy rains. As a result, the maximum discharge decreases many times, and the volume of suspended sediments in the channel decreases by tens and hundreds of times.

Preventive descent of lakes is an artificial emptying of outburst-prone lakes in order to prevent catastrophic mudflows and floods. Preventive descent of lakes is organized on lakes of dammed (littered)

World Bulletin of Social Sciences (WBSS)
Available Online at: https://www.scholarexpress.net
Vol. 20, March,2023
ISSN: 2749-361X

genesis, most often on glacier-dammed lakes, which serve as centers of glacial mudflows. Controlled discharge of water in ice dams is carried out by tunneling or clearing a cloak of loose clastic material, in dams from frozen rocks and ice - by creating a surface drain channel by an explosion to release.

The whole complex of measures to protect against mudflows should be carried out by the anti-mudflow service.

An anti-mudflow service is a specialized organization created to limit or eliminate mudflow hazards. The anti-mudflow service carries out the whole range of measures to protect against mudflows - design, construction and operation of the AP, reclamation of mudflow basins, control over the use of the territory, warning of mudflow danger. Such a service should be created in countries or regions where the problem of protection from mudflows (often, together with other natural destructive processes) is of vital importance.

As people develop mountain territories, the anthropogenic factor becomes increasingly important in the formation of mudflows, which has both a positive impact (fixation of mudflow-prone slopes, channel strengthening works, agroforestry measures, etc.) and a negative one.

The negative side of the atyrogenic factor in the development of mountainous territories is reduced to both agricultural and industrial human activities.

The negative impact of agricultural activities is due to:

unregulated and uncontrolled grazing on mountain slopes, leading to trampling and destruction of the soil and vegetation cover;

longitudinal rolling of slopes, creating erosion furrows along them, as well as other violations of mountain agricultural technology;

deforestation on mountain slopes, leading to intensification or occurrence of slope erosion and turning normal channels of mountain rivers into mudflow.

REFERENCES:

1. Law of the Republic of Uzbekistan of 1999 "On the protection of the population and territories from natural and man-made emergencies" dated August 20, 1999.
2. Makkambaev P.A., Razikov R.S. "Emergency situations and civil protection in railway transport" T.TashIIT 2018, 23-43 pages.
3. Law of the Republic of Uzbekistan "On the safety of hydraulic structures" dated August 20, 1999 "2015-2030 "On measures to implement the Sendai program on disaster risk reduction in the Republic of Uzbekistan in 2019 // Resolution No. 299 of April 12, 2019 of the Cabinet of Ministers of Uzbekistan.
4. Decree of the Cabinet of Ministers of the Republic of Uzbekistan No. 201 "On measures to prevent and eliminate catastrophic consequences associated with floods, mudflows and landslides."
5. Abdazimov Sh. Kh.; Kurbanov G. A.; Mamadaliyev N. "Landslide processes affecting transport facilities and their forecasting" production. technology. ecology. (Protek'2021). Page 135-142 M. 2021.
6. Niyazmetov S.S. "Method of calculation and design of anti-landslide structures to protect the road subgrade". Abstract of dissertation work. M. 2007
7. On measures to prevent emergency situations associated with floods, mudflows, snow avalanches and landslides, and eliminate their consequences: Decree of the President of the Republic of Uzbekistan dated February 19, 2007 NoPP-585 [Electronic resource]. – Access mode: http:// lex.uz/pages/getpage.aspx?lact_id=1132317. – Access date: 12/01/2017
8. Ponomarev V.M. Ensuring labor safety in railway transport // Transport RF, 2011. No. 1. P. 76-81
9. Shevandin M.A., Vygnanova T.M. Analysis of occupational injuries associated with collisions with rolling stock of railway workers. Novosibirsk, 1990, C 17-18.
10. Shevandin M.A., Zhukov V.I., Volkov A.V. Engineering safety solutions at railway crossings. Tutorial. M.: MIIT, 1999 - 103 p.
11. Ponomarev V.M. Model of interaction of the railway transport system for the prevention and liquidation of emergency situations with the functional divisions of Russian Railways OJSC M. "Transport of the Russian Federation" 2011, No. 2. From 45-50.
12. Mudflow and flood prevention program in Uzbekistan [Electronic resource]. – Access mode: http://uzdaily.uz/articles-id-18974.htm. – Date of access: 07/01/2017 14. Training manual on the problems of public protection in the Republic of Uzbekistan. Edited by T.B. Tuychiev, A.K. Nurkhodzhaev, V.F. Guryanov. GZ Institute.