NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATIONS IN ENGINEERING RESEARCH AND TECHNOLOGY [IJIERT]
ISSN: 2394-3696 Website: ijiert.org
VOLUME 7, ISSUE 10, Oct.-2020

PROTECTION OF TRANSPORT FACILITIES UNDER THE EFFECTS OF NATURAL EMERGENCIES

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ABSTRACT
In this article Transport facilities (bridges and tunnels) in Uzbekistan will be provided with information on the impact of floods and landslides on train traffic in mountainous and foothill areas in the spring and autumn. Landslides caused by floods not only have a major impact on railway facilities, but also disrupt the railway schedule. This affects not only JSC "Uzbekistan Railways", but also the economy. At the same time, it will lead the population to reach their destination and reduce tourism. Protection of the railway and its facilities from floods is one of the most pressing issues today. This is especially important in mountainous and foothill areas.

KEYWORDS: Pre-mountainous areas, landslides, floods, mudflows, barriers, protective structures, tunnels, bridges, floods, rocks, royal winds.

INTRODUCTION

Today, transport is one of the economic lifeblood of the Republic and is fulfilling its tasks wisely. This ensures the timely delivery of goods to all facilities of the national economy, along with the delivery of the population to their destinations.

At the same time, there is a risk of various disasters in the performance of these tasks, which can not be ignored. For example, all routes of Uzbek railways are not free from natural hazards. Rail transport is also operating on the following mountainous, flood-prone routes. That's itNukus-Kumshungul, Kumshungul-Chimbay, Nukus-Sultanuvaystog (79 km), Tuyamuyun-Turtkul (60 km), Chimbay-Kumshungul, Uchkuduk II-Sultanuvaystog (342 km), Ykkabog-Chirakchi (12 km), SHovot-Djumurtau (55 km),SHalkar-Poor thingand some sections of the Tashguzor-Baysun-Kumkurgan route are examples. More than 1,200 kilometers of new railway lines have been built on the Tashguzar-Baysun-Kumkurgan railway line, 3,800 kilometers of roads have been modernized and reopened, and about 1,100 kilometers of railways have been built. road (Figure 1) trunks were electrified. As a result, the total length of railways reached 6,500 kilometers, and they were able to cover all regions of the country.

The new Tashguzor-Baysun-Kumkurgan railway is the first railway built in the mountainous region. It crosses the mountain ranges at an altitude of 1800 m, serves as a natural boundary of Kashkadarya and Surkhandarya regions. On this road there are railway tracks with a slope of 10-18.5 ‰. [1].

37 bridges, 2 galleries and tunnels were built on the new railway. The bridges were erected along the Chashmaihafizon, Oqrabot, Shorab, Sherabad rivers and valleys, which are separated by the structures of the Gissar mountain system and have a high relief, near the Oqrabot pass.

Most of the mountains have 1.3 to 1 plains; 1 ... 5, river valleys - 18.5 ‰ with a sharp change in height and a large slope of the slope. is formed. The launch of the Tashguzor-Baysun-Kumkurgan railway will create favorable conditions for the development of various industries and transport services in Kashkadarya and Surkhandarya regions.

Figure 1. Image Bridges on the Tashguzor-Boysun-Kumkurgan railway line. (Strong floods can cause landslides, damage to bridges, and disrupt rail traffic).

These include the 129-kilometer electrified Angren-Pop line, construction of which began in July 2013 and was completed in July 2016. The launch of the Angren-Pop electrified railway line through the Kamchik Pass at an altitude of 2,200 meters above sea level has made it possible to transport goods and passengers by rail between the Fergana Valley and other regions of the country. . At the same time, China-Central Asia-Europe will serve as the most important link in the new international transit railway corridor. A 19.2-kilometer tunnel has also been built on the 123.1-kilometer section of the Angren-Pop railway passing through the Kamchik Pass. In addition, 285 artificial structures and water pipes with a total length of 2.1 km, 15 railway bridges and 6 overpasses with an average height of 25 meters were built. 4 stations, 4 crossings and 2 railway stations were built, 2 power stations were built.

Many parts of the listed railways are prone to flooding. Flood currents are different from floodplains in that they are unexpected and pass at high speeds in a short period of time. Often, floods are undulating because the solids inside them immediately accumulate, causing the flood flow to recur.

Flood currents or floods differ from typical floods by the large volume of solids within them and the large impact force of these flows. The content of solids in floods can range from 2 ... 4% to 6 ... 10%, while in floods the solids content can range from 10 ... 15% to 40 ... 90%. As the flow velocity V increases, the impact force P increases, i.e., similar to the kinetic energy of the flood current (Ekin = m · V2 / 2), the velocity increases in proportion to the square level. This means that the flood flow will have the ability to do a great deal of geological work. Based on this, floods can be included in the list of geological phenomena.

According to the researchers, the volumetric weight of flood currents can be 1.12… 1.9 t / m3 and more. According to the content of solids in the flood, flood flows are divided into three types.

1. Water - rocky floods.
2. Turbulent flowing streams.
3. Structural (linked) floods.

The volume of solids in water-rock floods is 10-20%. The solids of the mud are composed of coarse rock, rocky rock, and sandy body fragments. They are low in mud. The volumetric weight of these floods is 1.1 ... 1.3 t / m3.

The volume of solids in turbulent flowing streams is up to 20-30%. They have turbulent flowing motion. The volumetric weight of these floods can be 1.3 ... 1.7 t / m3.

The volume of solids within the structural (bound) streams is 80 .... 90%. There is no free water in these floods. These muds are rocky mudslides because they are often made up of mud and rocky rocks. The volumetric weight of these floods can be 1.7 ... 2.6 t / m3 [2]. They differ from other floods by their high viscosity.

Floods and mudflows form continental landforms of a certain type. Floods are geological phenomena that occur only in mountainous areas. For example, in the mountainous regions of Central Asia, floods are strong

and perform a great geological work in the washing, transfer and formation of layers of substances, depending on the conditions of their formation (Fig. 2).

Figure 2. As can be seen in the pictures, the strong impact of the flood current on the moving structures can cause landslides, blocking the road or knocking down the structures.

The formation of a flood depends on the amount of precipitation, i.e., how much it rains in a short period of time. Sometimes floods are also caused by the rapid warming of the air and the melting of snow in the mountains. There will be mountains, highlands, fast-flowing streams, ravines, valleys, eroded rocks, and a variety of other conditions for flood formation. [3]. As a result of the flood, agricultural lands are washed away, cut down, buildings, bridges and various buildings are destroyed, and accidents occur. Knowing in advance that a flood will occur allows you to accurately and clearly define the measures to combat it.

Mud flow is divided into types of turbid flow, rock-mud flow, water-rock flow and water sand-mud flow according to the composition of the solid product that forms it. In subsequent years, the first three types of flow are studied as structural (linked) and turbulent flow types. In addition to the conditions stated for the formation of a flood, the following factors must also be present: [3].

1. Physical and chemical erosion of rocks;
2. Presence of washing, carving, sliding and falling events on mountain slopes;
3. The geomorphological structure of mountain slopes is suitable for flooding;
4. The structure of rivers, streams and streams;
5. Degree of vegetation and tree cover of mountain slopes; 6. The nature of the soil layers at the top of the earth's surface;
7. Climatic conditions to be favorable for floods, etc.

Due to the flood, the railway was temporarily closed, the schedule was disrupted, passengers could not reach their destinations on time, and the national economy did not receive raw materials on time, and products could not be delivered to customers on time. will be. Measures to combat this are divided into two groups: the group of engineering and geological measures and the group of agroforestry reclamation and agro-technical measures. The first group includes dams, walls, canals that regulate the direction of the flood, as well as barriers that hold or reduce the strength of the flood. The second group includes leveling the slopes, reducing the slope, planting various plants and trees on the slopes, and similar activities. The second group of measures is used to combat floods that occur in areas where soft rocks are common. [3]. Depending on the climatic conditions of the areas where floods are observed and can be observed, geological changes, methods of flood control, the measures are selected, measures are determined.

The four main flood-prone areas in the Republic of Uzbekistan include the Syrdarya Basin (Chirchik, Syrdarya, Angren, Keskadjar), the Zarafshan River Basin, the Amudarya Basin, and the large number of floodplains flowing into the Fergana Valley in Namangan Province. Flood control measures have been developed in connection with the construction of irrigation and hydropower in the Chirchik river basin. Flood control measures in the Aktashsay basin (Figure 3) were carried out in a special way.

In case of flood flow through roads, gas pipelines, oil pipelines, irrigation canals and other barriers, in accordance with the topography and engineering-geological conditions, as well as the size and

characteristics of the flood flow, if the flood flow is located above them, below or in a plane carried out. Floodwaters are used to transfer flood currents over a protected object. The flood trap is in the form of a trough mounted on supports, which serves to lower the flood flow over a flood-protected object, to a predetermined depression or water source (Figure 4).

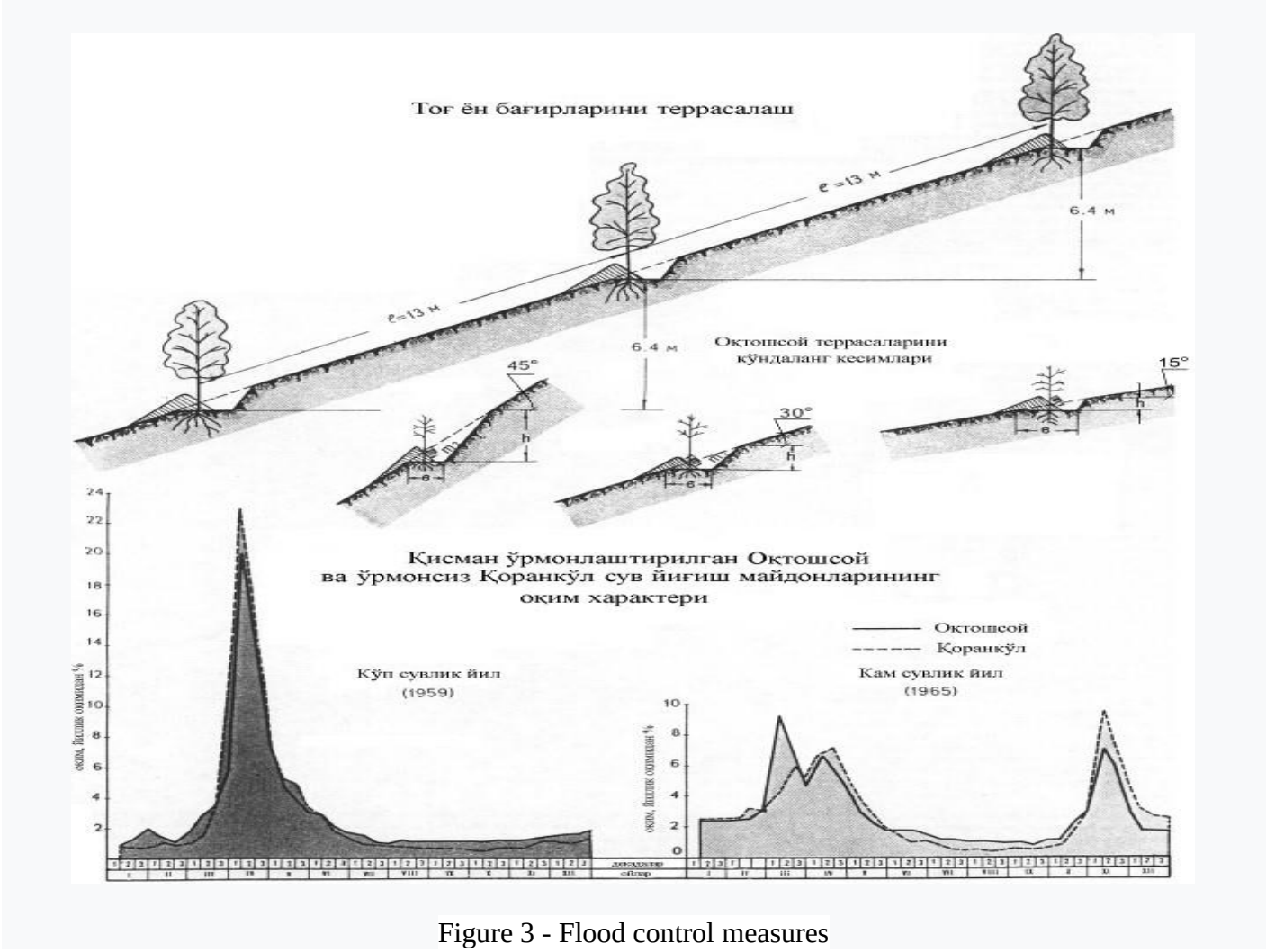

Figure 3 - Flood control measures

In order to correctly identify flood control routes and protect railways, it is necessary to thoroughly study flood basins, zoning them correctly. At the same time, separate measures will be developed for each zone. The following measures are recommended for each zone of flood basins:

1. Planting trees in the flood zone, construction of stormwater management facilities;
2. For the flood zone - construction of various barriers that change the direction of the flood, various structures that reduce the strength of the flood, the discharge of part of the flowing flood into another stream;
3. If flood control measures are taken in a timely manner, it will bring great benefits to the national economy. If large structures are constructed, such as flood-holding reservoirs, such structures will collect flood water and make full use of it to irrigate crops;
4. Installation of modern devices that detect landslides in the areas of railways, mountainous and foothill areas where there is a risk of landslides and landslides. Installation of means to inform the station duty officer and the single dispatch center about landslides on these facilities.
5. In the event of an emergency situation in the mountainous and foothill areas of the railway (landslides as a result of heavy flooding, washing away the railway, the collapse of wagons or landslides) rapid emergency - the organization of special teams to carry out rescue operations. These groups will need to be provided with modern rescue and recovery equipment, special clothing, and facilities for duty.

The above-mentioned precautionary measures include economic losses caused by natural disasters on the railways, injuries to people when wagons collapse or the destruction of raw materials of manufacturing enterprises, non-delivery of finished products to the customer, disruption of the schedule. very low percentage of losses. [7].

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