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THE USE OF GEOSYNTHETIC MATERIALS IN INCREASING THE STRENGTH AND DURABILITY OF THE ROAD SURFACE

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Abstract. *This article discusses the types of soils used for road surface construction, their application in the road surface, methods for improving the strength of the road surface in unfavorable soils and hydrological conditions usingem geosynthetic materials.*

Keywords: *road embankment, sandy soils, granular composition, geosynthetic materials, artificial soils, highways.*

ИСПОЛЬЗОВАНИЕ ГЕОСИНТЕТИЧЕСКИХ МАТЕРИАЛОВ ДЛЯ ПОВЫШЕНИЯ ПРОЧНОСТИ И ДОЛГОВЕЧНОСТИ ДОРОЖНОГО ПОКРЫТИЯ

Аннотация. *В статье рассматриваются виды грунтов, используемых для устройства дорожного покрытия, их применение в дорожном покрытии, методы повышения прочности дорожного покрытия в неблагоприятных грунтах и гидрологических условиях с использованием геосинтетических материалов.*

Ключевые слова: *дорожная насыпь, песчаные грунты, зернистый состав, геосинтетические материалы, искусственные грунты, автомобильные дороги.*

There are several types of soils that are used in the construction of roadways. Large-stone

mountain soils are clastic rock fragments that are formed during artificial mining or occur in natural conditions in the form of alluvium or deluvium. These soils are divided into paleogene and crushed stone soils.

Paving stones and rubble are considered a good material for the construction of risers, as they have good resistance to running water and do not absorb water. Water entering between decomposing rocks does not have much effect on the strength and stability of the roadbed, as long as these rocks are not weak and dry out quickly. However, compaction becomes difficult when large chunks of rock soil are used. An intermediate layer of soil with a thickness of 0.5 m should be laid between the gravel embankment and the road surface [1].

Industrial waste-slags of alkaline and neutral metallurgy, burnt dumps of coal mines are close to stony soils in their properties, and their unlimited use is allowed during the construction of parking lots.

Gravel and sandy soils allow water to pass through and do not accumulate moisture during freezing. Water absorption has little effect on the stabilityof these roadside soils. Pinesoils are considered the best material for parking in unfavorable hydrological conditions - in waterlogged areas and on the banks of rivers. Soils with a seepage rate of more than 0.5 m /day are considered saline soils.

Sandy loam has the property of adhesion in the dry state, while in the wet state it retains resistance to loads sufficient for the stability of the roadway. The lifts can be lifted from sandy loam in both dry and highly humid areas. Powdered sandy loam containing 50% of particles with a diameter of less than 0.25 mm will have low resistance in a state of high humidity [2].

Pollen loams and heavy pollen sandy loams contain dimensions of 2.0...Fractions of 0.05 mm have an increased content and are subject to wet accumulation and reproduction processes in winter.

On the slopes of the roadway, these soils are easily washed off and pass into a state of fluidity. Therefore, on roads with a significantly improved capital surface, the upper part of the roadway raised above dusty soils and dusty sandy loams is replaced with stable soils under unfavorable hydrological conditions.

Loamy soils are considered a good material for road surfaces. They resist washing well and are stable on slopes. When the water level decreases in loamy uplifts on reefs, the reverse movement of water that previously entered the uplift can create hydrodynamic pressure, causing the slopes to tip over.

Clay soils have much higher strength and very low water permeability, so they are slowly saturated with water and dry out at the same rate. These soils are used for pouring into drains in

dry places and in places of short-term moistening, if their humidity in the natural lying state does not exceed the optimal value, while clay soils in the waterlogged state pass into a state of soft plasticity, fluidity and become viscous.

In recent years, artificial soils are increasingly used in construction - ground production waste-slags, waste from heat and power plants and installations for incineration of household waste, low-grade waste of organic compounds from factories,cement dust and other materials. Many of these materials are similar in grain size to suspensions, and some have astringent properties. Their use in road risers is of great importance from the point of view of environmental protection, since the sites of spills of these materials occupy a large area, and the soluble compounds contained in them pollute surface and wastewater [3].

In this regard, it becomes urgent to solve problems related to strengthening the ground of highways with lifting geosynthetic materials.

In this regard, in developed countries of the world, including the USA, England, France, Germany, China, Japan, Italy, Russia and other countries, primeneniya geosinteticheskixeffective technical and economic indicators in the field of highways are achieved by using geosynthetic materials in the construction of transport structures.

In the Syrdarya, Surkhandarya and Kashkadarya regions of the republic, an experiment was conducted on the use of geosynthetic materials for the construction of road foundations and pavements. It was used on the reconstructed roads of Bukhara, Tashkent regions and the Republic of Karakalpakstan [4].

Geosynthetic materials are classified according to their location on the roadbed geosinteticheskieas follows:

- on the main surface and working area,
- in the elevator body, except for the working area,
- berm slopes and roadsides,
- on the grounds of,
- at water treatment plants,
- in separately located reinforcement and protective structures.

With the rational placement of materials that ensure the stability of the water regime of the roadway and protect it from water penetration, all these materials can be used in the construction of the roadway, which is built according to individual projects.

When using soils of different composition and properties in the construction of lifts, it is necessary to observe certain rules for placing them in the body of the lift, ensuring the stability of the roadway. Mixed-grass soils should be laid in horizontal layers on the body of the lift. In the

lower layers, soils that are poorly permeable to water are laid, and in the upper layers-soils that are well permeable to water itself [5].

Slope of water-repellent soil layers to the surface 20...A cross-section is given with two slopes of 40% each, which contributes to the flow of flowing water from the riser. It is necessary to ensure that water is diverted from the water-repellent soil layers to the slopes[6].

Entrances raised from the same ground in the form of a solid core, covered from above and from the sides with other soil, may be built during road reconstruction only to expand the roadway. Expansion of water-repellent underground parking areas in wet soils is not allowed.

It is forbidden to randomly spill soils with different properties. With such weaving, lenses are formed on the body of the lift, in which water accumulates, or inclined surfaces on which soil can tip over.

Soils and industrial deposits that may change in volume or lose stability when wet should be placed in the middle part of the riser height, alternating them with thin layers of sand or filter nonwovens-geotextiles[7].

Geosynthetic materials protect the road soil from excessive moisture, increase its load-bearing capacity and service life. Currently, the use of geosynthetic types is becoming increasingly popular in order to increase the priority of the access road, reduce its subsidence and deformation.

In this regard, the solution of problems related to strengthening the ground of highways with lifting geosynthetic materials remains relevant. In most cases, the geosynthetic materials used can perform several functions at once due to their versatility. Geosynthetic materials are characterized by their advantage over aggressive influences, frost resistance and reliability indicators for long-term use.

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