

Study of Deformations that Occur on Road Surfaces and Develop Measures to Prevent Them

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ABSTRACT

In this article, it is noted that the repair of roads and the commissioning of our roads will soon be in a state of disrepair. suggested the need for teeth. The process of building the pavement before the construction of our roads. At the same time, the fact that we have to process it at the time of construction, leads to an increase in service life and economic efficiency.

Enter. Our President Sh. M. Mirziyoyev at the meeting held on October 2, 2019, about the transition of public highways to cement concrete roads in Uzbekistan, as is the case in developed countries today. During the implementation of the assigned tasks, such situations were confirmed that the methods of building foundations and coverings of roads from pebble-sand, gravel-sand mixtures and soil treated with cement were developed. According to the requirements of paragraph 8.10 of the Code of Civil Procedure 3.06.03-08, it is indicated that the foundations (coatings) made of stone materials treated with cement should be performed in dry air, when the average daily temperature is not lower than +50C.

The construction of cement concrete pavements of highways is covered in detail in T. J. Amirov's educational manual entitled "Construction of cement concrete pavements of highways and airfields". Therefore, in this instruction manual, repair of surface layers of cement concrete pavements, preparation of the pavement surface for repair, the process of eliminating the migration of cement "cream", materials for the repair of the surface layer of the pavement, the preparation of the pavement surface The work to be carried out on the preparation for repair, the methods of preparation of the mixture were studied from a scientific point of view, and

recommendations were given for their implementation.

Materials and methods. In the preparation of the article, a lot of attention was paid to the comparative analysis and the study of foreign experiences and nationalization, as well as to the nationalization of technologies used in developed countries and, of course, to our own capabilities.

The main part. According to GOST 23558-94 "Flintstone-sand, gravel-sand mixtures and primers treated with inorganic binding materials for roads and airfields" according to the method of preparation of materials made of flint sand, gravel-sand mixtures and primers 'ra is called:

- Processed material. That is, limestone-sand, gravel-sand, limestone-gravel-sand mixtures, sand-slag mixtures, sand-cement-water mixing equipment (BSU) and cold resistance during project or interim periods. and artificial material that meets quality indicators such as durability is called processed (processed) material.[1]
- In the construction of the road, we will have to pay attention to reinforced soil. Reinforced soil is a soil reinforced with artificial material obtained by mixing soil with cement and water, usually in the object itself, and meeting quality indicators such as cold resistance and durability in the design or intermediate periods. Clause 1 of GOST 23558-94 can also be seen in the circle. This standard applies to gravel-gravel-sand mixtures and soils treated with inorganic cementing materials used for the construction of foundations. The processed materials and reinforced soils that we mentioned above can be used for the following layers in the construction of highways and airfields:[2]
- To the base layers
- To additional layers of the foundation
- To coatings

Figure 1



The process of applying the base and additional layers and coatings (photo by the author)

Grades for durability of processed materials and reinforced soils are established:

It should be noted here that for the M75 brand, there are requirements for compressive strength of 7.5 MRa, as well as bending tensile strength of not less than 1.5 MRa. But this requirement remains unchecked in most projects.

The most important thing is that in the calculation of the road structure, the tensile strength is used, not in compression, but in bending. It is known from practice that when the compressive strength is 7.5 MPa, the bending strength cannot provide 1.5 MPa.[3]

Table 1. Grades of soil strength

Strength level	Tensile strength, MPa (kgf/sq.cm), not less than	
	Rsj for compression	Rizg for tension bending
M10	1,0 (10)	0,2 (2)
M20	2,0 (20)	0,4 (4)
M40	4,0 (40)	0,8 (8)
M60	6,0 (60)	1,2 (12)
M75	7,5 (75)	1,5 (15)
M100	10,0 (100)	2,0 (20)

A sample taken from a low-cement limestone sand mixture has a tensile strength of 1.5 MPa, and in practice, the compressive strength is 10-12 MPa. As a result of the conducted scientific studies, it became clear that increasing the tensile strength of a low-cement concrete mixture by increasing the amount of cement causes cracks to appear in the base or coating. According to clause 4.1.2 of the GOST 23558-94 standard, processed materials and reinforced soils should correspond to the F5, F10, F15, F25, F50, F75 brands, respectively, in terms of cold resistance. But, as above, these requirements of the standard are not required in many objects.

The brand of portland cement, slag portland cement, sulfate salt-resistant and pussol cements used as binders for treated materials and reinforced soils should be at least 400 marks for the coating, and at least 300 marks for the base.[4]

The main rules and disadvantages of building foundations and coverings from cement-treated pebble-sand, gravel-sand mixtures and soils. According to the requirement of paragraph 8.10 of ShNQ 3.06.03-08, it is indicated that the foundations (coatings) made of stone materials treated with cement should be performed in dry air, when the daily average temperature is not lower than +50C. However, the daily average temperature of the air At temperatures from -50C to -150C, it is allowed to heat the base, water and fillers, and add antifreeze chemical additives to the mixture. In this case, the highest permissible temperature of water is 800C, that of fillers is 500C. The temperature of the mixture at the exit from the mixers should be at least 250C. It is necessary to heat the mixture with the gases emitted by the car and transport it in closed dump truck bodies. The time it takes to transport the mixture is determined before production, but should not exceed 60 minutes.[5]

Processed material and reinforced soil can be transported on any type of truck. When portland cement, slag-portland cement, slag and ash binders activated with cement, liquid glass are used as a binder, the duration of production and compaction work should not exceed 5 hours. After the base layer is accepted, the work of laying the mixture is started. The subgrade must be leveled to the design height and fully compacted. It is necessary to carry out geodetic measurement works before starting foundation construction works. In order to ensure continuity of work, temporary access roads are prepared for transporting materials. A sufficient number of construction machines, dump trucks and labor force should be organized to ensure the work is carried out in a uniform manner.

Mechanism of execution. The base, the additional layer of the base and the covers can be built from treated material or reinforced soil in three different ways.

1. Asphalt concrete and concrete laying machine
2. On a motor grader
3. In recyclers

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The size of the processed material is determined by the width, length, and thickness of the raised material prepared for the foundation. The thickness is determined by experimental compaction in the initial period of work, if the compaction reserve is calculated in the amount of 1.2-1.4.[6]

The advantages of this road construction method are as follows:

- ✓ After determining the compression coefficient, the required thickness can be easily achieved by pulling the wire rope.
- ✓ Placement of the transported mixture without settling.
- ✓ Reducing the size of geodetic measurement works.
- ✓ Non-installation of wooden beams to the required width limits.

Of course, we all know that every job has advantages, but there are also difficulties to achieve results. As a result of my scientific research, I am convinced that there are the following processes of development

Of course, after every work, there are shortcomings in it. As a result of the conducted scientific research, the following was determined.

Currently, there is a shortage of powerful crawler asphalt paving machines in cement-mix laying, and the machine's mixing transfer device wears out quickly. there are cases of work stoppage due to technical malfunctions, drying of the mixture as a result of it standing in trucks, deterioration of the quality of the laid layer due to the start of the hardening process, occurrence of scattering (shelushenia) on the surface and loss of strength. In the performed works, unevenness appears in the parts where the mechanism is stopped, defects appear in the seams between the first row and the next rows.[7]

Prospective. The point of view of this scientific article is that the conducted scientific research has proven that if we build a stone-concrete road, we will save billions of funds that are going to our roads. A clear example of this is that today we have 79,465,000 kilometers of local domestic roads, 90% of which we need to lay a hard surface. We can build

Figure 3



Methods of accounting for irregularities in the construction site and construction methods of coating (photograph by the author)

Conclusion. Taking into account the above-mentioned shortcomings, the construction of the base and covers on a motor grader: The mixture is transported by dump trucks, the preliminary distribution works are carried out with the help of motor graders on the edge of the road where wooden brushes are installed, and the initial compaction is carried out with the help of a roller. After the geodetic measurements are completed, if the height markers are provided, the mixture is distributed and compacted in the prescribed manner with the help of rollers. The convenience of this method is that the transported mixture does not remain in trucks, and first of all, if it is delivered to the object on time and laid in a sufficient period, it will be possible to achieve the said durability.

The next advantage is that it is possible to eliminate the unevenness that has arisen before the compaction work is completed. After eliminating the above shortcomings, efficiency will certainly increase and the service life of our roads will increase, and at the same time, it will be possible to achieve economic efficiency after the service life has been extended.

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