

Improvement of asphalt pavements during construction and repair, taking into account foreign experience.

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Annotation: It is about analyzing the construction of asphalt pavements, studying foreign experience and making proposals for the introduction of foreign technologies in Uzbekistan.

Keywords: Car, road, transport, vehicle, quality, factor, economy, price, repair, safe, passenger, substrate, technology, reconstruction.

Introduction. Roads are an important asset for a country and a key driver of economic growth. In order to increase the efficiency of vehicles, speed of delivery and passenger traffic, traffic safety and comfort, as well as reduce transportation costs, first of all, improve the transport and operational characteristics of roads, repair and maintain roads. you need to radically improve your work. This will require the improvement of road repair and maintenance technologies and the use of advanced foreign technologies in this area. Today, one of the most important tasks in the country is the improvement of transport infrastructure, in particular, the improvement of the quality of roads, the construction of new roads and the reconstruction of existing ones. The service life of asphalt concrete pavements depends not only on the quality of asphalt concrete, but also on the design of the pavement. Asphalt pavement of the same quality performs differently on different substrates. This means that cracks in asphalt concrete pavements laid on monolithic cement concrete bases occur as a result of thermal incompatibility of pavement and foundation materials, i.e. seams and cracks in cement-concrete bases are repeated in asphalt concrete pavements.

Methodology. The ways of achieving high quality of the roadway during the construction of non-rigid pavement are revealed. Pavement structure:

- top layer - road surface;
- bottom layer – road base;
- additional layers.

The following requirements apply to pavement:

1. strength, roughness, evenness;
2. must ensure traffic safety;

3. profitability, including the cost of construction, repair and maintenance;

4. reliability. Non-rigid pavement is a layered system of endless, in terms of dimensions, continuous pavements on an elastic base. Main pavement materials:

- asphalt concrete and tar concrete;
- bituminous emulsions and cement;
- crushed stone, gravel and slag.

Non-rigid clothes differ from rigid ones by calculation methods and parameters of permissible deformations. The ratio of strength and modulus of elasticity of non-rigid clothing coating materials is higher than that of rigid ones. On average, the thickness of the asphalt concrete pavement is 10-15 cm, the thickness of the cement concrete pavement is 20-26 cm. Also, non-rigid pavements have better maintainability, so non-rigid pavements are widely used. Next, consider some of the construction technologies that have been developed to increase the strength and reliability of pavements.

Analysis and results: The technology of "self-healing" asphalt used in the construction of roads The application of this technology is the addition of conductive carbon multi-walled nanotubes "Taunit-M". They have unique parameters that determine their high inductive susceptibility. These nanotubes eliminate long and unfavorable for drivers repair work to replace the upper protective layer of the roadway, which requires long-term blocking of part of the route. The additive will slightly increase the cost of roads, since it is enough to use 17 g of nanotubes for 50 kg of bitumen. The mixture is enough for a ton of asphalt concrete. The technology under consideration also takes into account the use of special equipment, a hybrid of an asphalt roller and a microwave oven, which will move along the coating, heating the upper layers and thereby setting the nanotubes in motion. This will help defects on the road grow together on their own, which can significantly reduce the duration of repair work [2]. Application of the SUPERPAVE system A feature of this technology is the improvement of the binder bitumen emulsion based on modern research on the physical properties of bitumen. During the development and testing phases of "superpave" coatings, they were exposed to the actual temperatures of everyday asphalt use. The fact of the resistance of the coating to age-related deformation was also checked. The "superpave" technology excels in the following types of pavement failure: rutting, fatigue cracking, thermal cracking.

The Superpave system includes 3 interrelated components:

- SHARP - specifications and test methods for bitumen;
- Superpave - specifications and method for designing asphalt mix compositions with determination of pore characteristics of compacted asphalt concrete samples;
- test methods and a system for analyzing the rheological properties of asphalt concrete using mathematical performance models and computer software[3].

Conclusion. The article reveals ways to achieve high quality of the roadway in the construction of non-rigid type pavements, which consist in the use of modern technologies, as well as in observing the temperature regime. The technologies described in this article have a number of advantages. The addition of conductive carbon multi-walled nanotubes will reduce the repair time to several hours, as well as reduce costs by 3 times. Carbon nanotubes significantly increase the strength,

water resistance, frost resistance and durability of bitumen, and hence asphalt concrete. The SUPERPAVE technology will make it easier to choose the right bitumen for specific road and climatic conditions and, accordingly, increase the strength and reliability of the structure. To achieve the highest quality, work on the construction of non-rigid pavements should be carried out in dry weather at an air temperature of 5°C in spring and 10°C in autumn. The base must be clean, dry and not frozen. Cold asphalt mixes should be completed at least 15 days before the onset of autumn rains.

References

- [1]. Васильев А.П. Эксплуатация автомобильных дорог. 2 часа. М.Академия. 2010. 320 с.
- [2]. Ivanova OI, Sedov DV Technology of "self-healing" asphalt used in road construction // In the conference proceedings: Actual issues of engineering and technical expertise. 2018.S. 85-88.
- [3]. Крестина М.О., Орехов С. А., Дергунов С. А., Сатюков А. Б. Особенности системы SUPERPAVE В сборнике трудов конференции: Новое слово в науке и практике. 2017. С. 18-22.
- [4]. A.X.Khabibullayev, M.O.Yusupjonov, Sh.O. Azimjonov “ENSURING CONSTRUCTION QUALITY IN THE CONSTRUCTION OF ASPHALT CONCRETE PAVEMENTS ” Euro Asia Conferences. Euro Science: International Conference on Social and Humanitarian Research, Hosted from Cologne, Germany. April 25rd-26th 2021. <http://euroasiaconference.com>. Pages: 119-122.