

## IMPROVING THE QUALITY OF CONSTRUCTION USING FOREIGN TECHNOLOGIES WHEN INSTALLING ASPHALT PAVEMENTS USING LOCAL RAW MATERIALS.

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### ABSTRACT

During the construction of asphalt pavements in the Russian Federation and other foreign countries using local raw materials to improve the quality of the pavement and increase the service life of the pavement, as well as the analysis and introduction of mineral powders in Uzbekistan is underway.

**Key words:** effect, vibration, consumption, operation, asphalt concrete, coating, material, economics, laboratory, Avtodor, mineral powder, GOST, IP-50M-autopress, USSR State Construction Committee.

### INTRODUCTION

The condition of asphalt concrete pavements has a significant impact on the efficiency of road transport. The presence of various types of damage and irregularities on the surface of the road surface leads to excessive fuel consumption when vehicles are moving, and the occurrence of an increased level of vibrations leads to accelerated wear of both the road surface itself and vehicles. As a result, the cost of transportation by road is 1.5 times higher, and fuel consumption is 30% higher than similar indicators in developed foreign countries. Significant funds are spent annually on the construction and repair of roads with asphalt concrete pavements, and the share of costs for repair and maintenance of roads in order to maintain the road network in the required transport and operational condition exceeds the volume of costs for new construction and reconstruction. The actual service life of asphalt concrete pavements in conditions of heavy traffic is in many cases no more than 4–5 years, and often only 2–3 years. This situation forces road organizations to carry out multiple repairs during the operation of the road, to spend significant material, labor and financial resources to maintain the required transport and operational indicators of highways. Actual directions of increasing the efficiency of spending financial and material resources in the construction and repair of road asphalt concrete pavements are:

- the use of resource-saving technical solutions, including the widest possible use of local materials and secondary material resources;

- extension of the service life of road asphalt concrete pavements, which can significantly reduce the cost of repair work during operation; - improvement of the system of technical requirements for the materials, technologies and structures used;

- active use of innovative technical solutions. Road construction has significant reserves of resource conservation [1], saving material and energy resources with significant consumption of road building materials used in the construction and repair of road structures [2]. So, in particular, the construction of 1 km of road asphalt concrete pavement requires 1,500–2,000 tons of asphalt concrete mixture (with an estimated pavement width of 7 m and a pavement layer thickness of 10 cm). This requires the consumption of 700–1200 tons of high-strength crushed stone, 600–800 tons of sand, 75–120 tons of mineral powder and 80–100 tons of petroleum bitumen. For multi-lane roads, these numbers increase significantly. In addition, the production,

transportation and processing of the materials used require significant energy costs. Analysis of the structure of energy consumption, as well as material resources in the construction of road asphalt concrete pavements made it possible to identify the most effective areas of resource conservation in the construction and repair of road asphalt concrete pavements.

## METHODOLOGY

A feature of the technology for preparing asphalt concrete mixtures using crushed stone materials of different genesis lies in the rational selection of crushed stone fractions of different genesis, which makes it possible to ensure better compaction of such asphalt concrete mixtures in comparison with traditional compositions prepared on the basis of crushed stone of the same type. Due to the higher density, a higher water resistance and strength of the resulting asphalt concrete is provided, despite the presence in its composition of a certain proportion of less durable crushed stone particles. Asphalt concrete prepared according to the indicated principle can be considered as a new type of asphalt concrete ("type E"). For such asphalt concrete were developed Technical conditions TU 218 RSFSR 541–85, approved by the USSR State Construction Committee No. 002 \ 025800 dated 25.04.86, as well as recommendations for their application.

## ANALYSIS AND RESULTS

In the direction of using secondary material resources, the problem of using products from the processing of worn-out automobile tires is of great economic and environmental importance. There are many different technologies for using crumb rubber in asphalt concrete, each of which has its own advantages and disadvantages. In order to develop the most effective technology for using crumb rubber in asphalt concrete, Avtodor Group of Companies in 2014–2015. methodological recommendations and technical requirements for rubber-asphalt concrete have been drawn up, in which great attention is paid to ensuring the homogeneity of both the obtained rubber-bitumen binder and rubber-asphalt concrete.

## CONCLUSION

An important advantage of this technical solution is that the road surface made of such asphalt concrete retains stable frictional properties during operation due to uneven wear of crushed stone particles of different strength. To implement the specified processing of GOST, it is necessary to carry out a complex of studies with the development of new test methods to determine the design parameters of asphalt concrete and to refine the required values of these parameters. In particular, it is necessary to change the principle of designing the optimal composition of asphalt concrete, which is currently based mainly on data on the grain size composition of the mineral part of the mixture and the results of determining the strength at slow compression at 200 C and does not take into account the peculiarities of the composition and properties of the asphalt binder. As a result of the wear of automobile tires on such a surface and self-healing of the surface, in contrast to the coatings used in traditional asphalt concrete compositions, the surface is evenly distributed as a result of the use of crushed stone. As a result, the same power is distributed. This effect allows significant savings during operation, since it allows you to exclude (or significantly reduce) the cost of removing the restoration of the coating by placing layers of surface treatment.

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