

ANALYSIS OF METHODS FOR INCREASING THE EFFICIENCY INDICATORS OF ROAD NETWORKS

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Abstract: A number of scientific and practical measures are being taken to ensure the high-quality and long-term service of highway networks in the world, including the road sector of the Republic of Uzbekistan, which is engaged in the elimination of problems and shortcomings in the construction and service life of reinforced concrete bridge structures, the use and introduction of new materials resistant to erosion and corrosion, and as a result, achieving energy and resource savings, as well as extending the long and high-quality service life of highway structures, are among the main issues. The article presents sufficient recommendations and solutions in this regard.

Introduction: The road sector of the Republic of Uzbekistan is distinguished by the presence of various historical and modern artificial structures. The construction of reinforced concrete bridge structures has been growing since the beginning of the 20th century and subsequently in line with the development of the transport system. As a result, not only the requirements for the architecture and design of structures are increasing, but also the requirements for strength and durability[1]. In particular, it is necessary to take into account the future growth of loads on bridges. Today, as a result of the development of the world economy, science and technology, as well as the desire of people to diversify in industrial sectors, the problem of assessing the operational reliability and durability of reinforced concrete bridges and their effective use is becoming urgent.

Main part. In industrial sectors of the economy, the highway system is properly designed, energy-saving technologies are used, and control and repair work is carried out in all four seasons of the year. A good first step in maintaining the road surface is to increase the service life of the asphalt. In this process, the asphalt used in the highway system is used to reduce economic costs by adding temperature, humidity, and mechanically resistant waste products to the asphalt composition, and the poor adhesion of the mechanical and waterproofing alloy in the highway system causes the highway system to be repaired before the deadline specified in the design, and as a result, first of all, the working time and quality of the population and industrial production products are impaired, and people are harmed both economically and economically[2]. Treatment is applied at the top of the curve. This can be done as part of a new build or shortly after construction.

The main function of the rejuvenator is to maintain durability and seal the surface[3]. This extends the time until more expensive processes are required.

Asphalt life extenders replace asphalt components known as asphalt cementitious additives. These are components of asphalt cement that are initially lost in the heat of production and then continue to dissipate over time due to exposure to air and oxidation[3]. Maltens are natural components of asphalt that create fluidity and consistency. Maltens can be said to be somewhat like glue, giving the asphalt its adhesive properties.



Figure 1

Renovation of the road pavement system of European countries

a) before renovation b) during renovation

From the analysis and research, it is known that it is now necessary to check the waterproofing and mechanical strength of the asphalt to see if the interface of the suction pipe is leaking. When the asphalt pump and the pipe are blocked by the alloy asphalt, it can be used to cook the bubble and the pump should not be forced to turn. Cooking the asphalt ball and rubber parts is necessary.

Vehicles must use marked lanes or road barriers in the area where the work is being carried out[4]. The trajectory of movement in this area must be clear to drivers, therefore, when the duration of the work is up to three days, technical control devices such as road barriers, cones, plastic curbs, temporary signs may be used to control the flow of traffic[5]. In the repair areas, road signs equipped with cones, barriers, road markings or light signals may be installed in a complex.



Figure 2

Road section under repair in our country

Technical means of organizing traffic warn road users of various dangers and help them choose the right direction and mode of movement. They prevent cars from entering areas where repair work is being carried out and limit the access of strangers to the construction site. They create convenience by determining the order of movement of vehicles on narrow sections of the road[6]. Due to the practical application of these methods, the mechanical and hydro-insulation systems of road crossing systems will show high-quality work results up to the designed period of operation, Figure 1 shows a diagram of current and monthly costs.

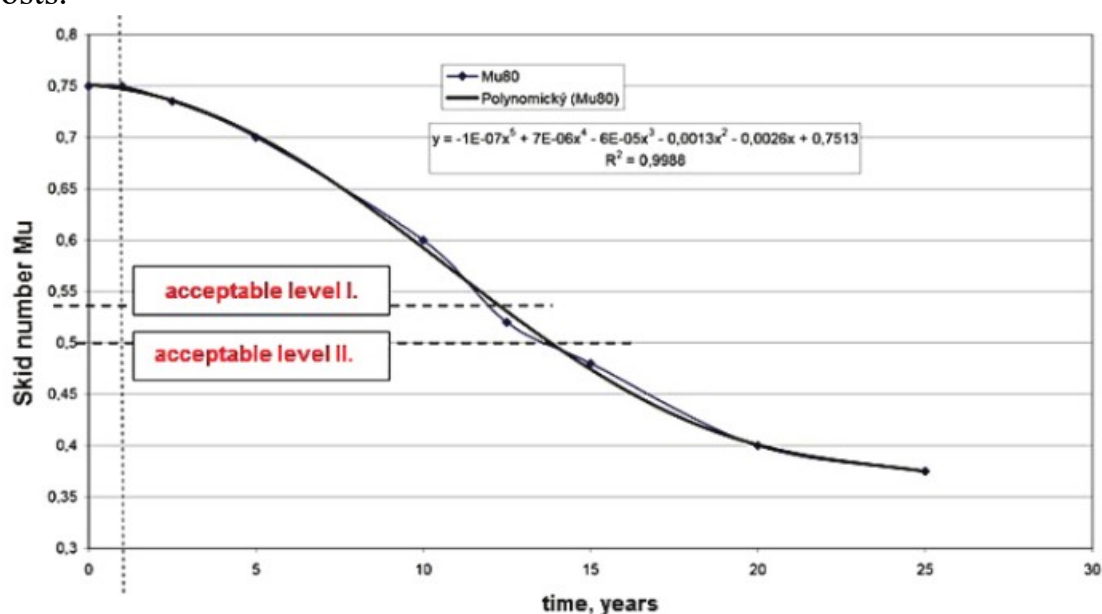


Figure 3

A diagram of the costs of a highway overpass system over the design period.

Improving hydrological calculation methods in the design of highway drainage systems involves increasing the accuracy and efficiency of determining water flow rates and drainage requirements. This can be achieved through the following measures:

1. Updated dataset: Collect complete and up-to-date hydrological data, including rainfall patterns, soil properties, and topography, to ensure accurate calculations.
2. Advanced modeling techniques: Use advanced hydrological modeling software to simulate and analyze water flow, runoff, and drainage patterns. This helps optimize the design of drainage systems.
3. Incorporating climate change factors: Consider the potential impact of climate change on rainfall patterns and intensity to ensure that the drainage system can withstand future conditions.
4. Integrating green infrastructure: Integrate sustainable drainage practices such as permeable pavements, bioswales, and watersheds to effectively manage stormwater runoff.
5. Collaboration and expertise: Involve hydrologists, civil engineers, and other relevant experts to ensure the use of best practices and the latest research results in hydrological calculations.

Conclusion: The justification of the cumulative costs incurred due to the reliable and quality maintenance of mechanical and hydro-insulation structures of highway crossings within the project period is presented in Diagram 1. In addition, considering that the cargo and population moving on highway crossings reach their destination safely within the specified time, monitoring and control of highway structures it requires the use of a system and remote measurement and monitoring devices, and as a result, we will increase work efficiency and facilitate the work of preventive maintenance personnel. In conclusion, ensuring high-quality and long-lasting road transport will help economic sectors grow and people reach distant destinations.

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