

Reinforced concrete highway defects and damages in the roadway structures of bridges appearance to be analysis

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The occurrence of defects is caused by various natural phenomena, the effects of rolling stock, as well as certain shortcomings in the construction technology, construction and operation of the structure.

Studies on bridges show that the deterioration process of the roadway begins with the appearance of cracks in the asphalt concrete pavement. Over time, these cracks lead to the destruction of the asphalt concrete layer, which in turn leads to the failure of the protective layer and waterproofing system. At the same time, during the winter months, damage occurs due to the formation of ice as a result of water entering these cracks (Figure 1).



Figure 1. Different external effects as a result asphalt on the cover appearance to be defect and injuries

In recent years, new modern waterproofing materials have been widely used in our

country to improve the waterproofing system of highway bridge structures, but the shortcomings in the system have not been completely eliminated.

From *a technological* perspective, the main disadvantages are (*Figure 2*):

- Insufficient coverage: This occurs when the waterproofing material does not provide sufficient coverage over the entire surface of the bridge deck. Cracks allow water to penetrate, leading to the occurrence of a failure phenomenon (Figure 2);
- Improper application: If the waterproofing material is not applied correctly according to the manufacturer's instructions or industry standards, it can lead to defects. This can include incorrect thickness, inconsistent application, or insufficient drying time, which reduces the effectiveness of the waterproofing system;
- contractors are poorly qualified and not adequately equipped to use new technologies in bridge construction, or old methods are still used;



Figure 2. Defects caused by improper application of waterproofing.

In foreign countries, the construction of a waterproofing system is carried out by specialized companies with at least 30 years of experience in this field. In the CIS, as well as in our country, this work is carried out by bridge builders, which increases the likelihood of a significant negative impact on the quality of construction work.

To improve the quality of bridge construction, it is advisable to entrust the work to specialized organizations that have modern technology and equipment for this type of work, and, of course, it will serve to prevent malfunctions in the operation process,

while also allowing for the extension of the operational life.

Over time, the bridge deck develops cracks, concrete surface deterioration, and delamination (separation of concrete layers) due to natural and climatic factors such as moisture, freezing and thawing in the winter months, and sunlight. Bridge inspection materials indicate that operating organizations do not pay sufficient attention to regular maintenance of asphalt-concrete pavements, which leads to deterioration of protective and waterproofing layers.

Also, timely cleaning of drainage pipes and deformation joint structures is not carried out, and puddles that form on the bridge deck are not eliminated.

To ensure proper operation, operating organizations must be equipped with appropriately qualified personnel, special equipment, and mechanisms.

Conclusion. The above factors have shown that the defects and damages that occur have a significant impact on the reduction of the load-bearing capacity of the bridge span. It is clear from this that there is a need for research on improving the design of the bridge deck.

Literature

1. Bahromkulovich, M. G. (2023). BRIDGE DECK STRUCTURES: LOCAL AND FOREIGN EXPERIENCE. *Scientific Impulse*, 1(10), 1313-1319.
2. Raupov, C. S., Malikov, G. B., & Zokirov, J. J. (2022). FOREIGN EXPERIENCE IN THE USE OF HIGH-STRENGTH EXPANDED CLAY CONCRETE IN BRIDGE CONSTRUCTION (LITERATURE REVIEW). *Евразийский журнал академических исследований*, 2(10), 125-140.
3. Raupov, C. S., Malikov, G. B., & Zokirov, J. J. (2022). FOREIGN EXPERIENCE IN THE USE OF HIGH-STRENGTH EXPANDED CLAY CONCRETE IN BRIDGE CONSTRUCTION (LITERATURE REVIEW). *Евразийский журнал академических исследований*, 2(10), 125-140.
4. Raupov, C. S., & Malikov, G. B. (2022). CREEP OF EXPANDED CLAY CONCRETE UNDER COMPRESSION AND TENSION. *Innovations in Technology and Science Education*, 1(3), 4-15.
5. Zokirov, F., & Normurodov, H. (2024). EKSPLOATATSIYADAGI AVTOYO ‘L KO ‘PRIK INSHOOTLARI ORALIQ QURILMALARNING YUK KO ‘TARISH QOBILIYATINI MIDAS CIVIL DT YORDAMIDA VAHOLASH. *Наука и технология в современном мире*, 3(6), 7-12.
6. Салиханов, С., & Zokirov, F. (2022). МОСТОВОЕ ПОЛОТНО С ПРИМЕНЕНИЕМ СОВРЕМЕННЫХ ГИДРОИЗОЛЯЦИОННЫХ МАТЕРИАЛОВ. “*Yosh ilmiy tadqiqotchi*” xalqaro ilmiy-amaliy anjumani. *Toshkent–2022 y.*
7. Zokirov, F. Z., Pirnazarova, G. F., & Ozodjonov, J. T. (2023). MODERN MATERIALS IN THE WATERPROOFING SYSTEMS OF HIGHWAY REINFORCED CONCRETE BRIDGES. *IJTIMOY FANLARDA INNOVASIYA ONLAYN ILMIY JURNALI*, 3(7), 1-6.