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Development of an on-Board System for Monitoring the Condition of the Road Surface

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Annotation: *In this paper, the development of an on-board system for monitoring the condition of the road surface, the evaluation of the longitudinal smoothness and the coefficient of bite of the road surface, the evaluation of the longitudinal smoothness and the coefficient of the bite of the road surface, the evaluation of the strength of the road surface and the determination of the road structure and the measurement of the rut of the road surface and information about identifying defects is given.*

Keywords: *road, on-board system, coating, system, tool - equipment, measuring instrument, pavement, state register.*

INTRODUCTION.

Monitoring and description works are carried out using 2 road diagnostics mobile laboratories and special equipment for road inspection.

The tools used in monitoring and diagnosis are included in the state register and undergo periodic attestation in accordance with the legislation on ensuring compliance of measurements with the standard.

Processing of the results of field work of observation and description and drawing up a technical report on diagnostic work, complex measurement software and complex software for managing the condition of highways and artificial structures are performed [1-5].

MAIN PART.

Evaluation of the longitudinal smoothness and bite coefficient of the road surface.



Figure 1.

The bite property of the coating is evaluated with a trailer device PKRS-2U. The obtained values of the bite coefficient are brought to the calculation temperature of 20°C in accordance with IKN 05-2011 "Rules for diagnosis and assessment of the condition of highways". A detailed instrumental examination is performed using the IKSP small-sized instrument.



Figure 2.

Assessment of the longitudinal smoothness of the coating is carried out in two ways: "Integrirovaniya" method, smoothness is determined using a mobile road laboratory equipped with a laser profilometer and PKRS-2U trailer device;

The ordinates of microprofiles are determined using the "IRI" method and profilometric devices. The international index of flatness "IRI" is calculated in 100 and 1000 meter parts [6-11].

In order to improve the quality of the work performed, all equipment for measuring the longitudinal plane of the pavement is calibrated in special polygons prepared using high-precision levels and invar rails.



Figure 3

During road diagnostics, a digital video image is additionally taken using one to three cameras or a panoramic video camera.

The processing program allows you to take a panoramic image of the road and create a single video bank of the road system. Measurements of the volume of road patching works, covering, and the width of the road edge are carried out by means of video footage.

Assessment of the strength of the road surface and determination of the road structure



The strength of the Nobikr road surface is carried out using a long-base bending measuring device (progibomer) and dynamic loading devices Dina-3M, Dina-4. In order to assess the conditions of the base of the road surface and the soil base, the dimensions of the bend pit are determined at 5 points.

Determining the structure of the road surface is performed using a corer. Determination of the composition and moisture content of road base soils is performed by a certified laboratory of road construction materials [12-15].

Measurement of the track of the road surface and identification of defects



A detailed instrumental inspection of the transverse smoothness of the road and determination of the bending depth is carried out using the IK-2S track gauge.

Video recording of pavement defects is performed using a high-speed camera with a width of 4.0 m and a resolution of 1 mm. Data processing is performed in semi-automatic mode.

The high accuracy of the equipment makes it possible to detect even the smallest defects within the guaranteed period.

REFERENCES.

1. Собиржонов Т. М. и др. Кинематика масаласининг комплекс сонлар ёрдамида ечилиши //Science and Education. – 2022. – Т. 3. – №. 5. – С. 118-125.
2. Djalilov M. L., Sabirjanov T. M. ANALYSIS OF THE GENERAL EQUATIONS OF THE TRANSVERSE VIBRATION OF A PIECEWISE HOMOGENEOUS VISCOELASTIC PLATE //American Journal Of Applied Science And Technology. – 2022. – Т. 2. – №. 04. – С. 18-28.
3. Sherzodbek Y., Sitora M. THE ESSENCE OF CARTOGRAPHIC MAPS IS THAT THEY ARE USED FOR CARTOGRAPHIC DESCRIPTION OF THE TERRAIN //GENERALIZING WORKS IN THE PREPARATION OF MAPS.–2022.–2022.–2022. – 2022.
4. Khudainazarov S. et al. Dynamics of high-rise structures taking into account the viscoelastic properties of the material //E3S Web of Conferences. – EDP Sciences, 2021. – Т. 304. – С. 02004.
5. Mirsaidov M. et al. Damping of high-rise structure vibrations with viscoelastic dynamic dampers //E3S Web of Conferences. – EDP Sciences, 2020. – Т. 224. – С. 02020.
6. Mavlyankulova S. Z. et al. THE ESSENCE OF CARTOGRAPHIC MAPS IS THAT THEY ARE USED FOR CARTOGRAPHIC DESCRIPTION OF THE TERRAIN. GENERALIZING WORKS IN THE PREPARATION OF MAPS //RESEARCH AND EDUCATION. – 2022. – Т. 1. – №. 4. – С. 27-33.
7. Khudainazarov S., Sabirjanov T., Ishmatov A. Assessment of dynamic characteristics of high-rise structures taking into account dissipative properties of the material //Journal of Physics: Conference Series. – IOP Publishing, 2019. – Т. 1425. – №. 1. – С. 012009.

8. qizi Olimova D. S. et al. THEORETICAL BASIS FOR THE USE OF MODERN GIS TECHNOLOGIES IN THE CREATION OF NATURAL CARDS //RESEARCH AND EDUCATION. – 2022. – T. 1. – №. 4. – C. 4-10.
9. Khakimova K. R. et al. SOME TECHNOLOGICAL ISSUES OF USING GIS IN MAPPING OF IRRIGATED LANDS //Galaxy International Interdisciplinary Research Journal. – 2022. – T. 10. – №. 4. – C. 226-233.
10. Zokir A., Sherzodbek Y., Durdona O. THE STATE CADASTRE FOR THE REGULATION OF INFORMATION RESOURCES FOR THE FORMATION AND IMPROVEMENT //Educational Research in Universal Sciences. – 2022. – T. 1. – №. 1. – C. 47-53.
11. Arabboevna A. M., Shavkat o'g'li Y. S. The Use of Geoinformation Systems in the Study of the Land Fund of Household and Dekhkan Farms //Texas Journal of Multidisciplinary Studies. – 2022. – T. 8. – C. 163-164.
12. Raximjonovna X. K. et al. The Composition of the Lands Used in Agriculture and their Electronic Cartography //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 7. – C. 65-70.
13. Turdimatova G. M. et al. IMPROVING THE ORGANIZATION OF TOPOGRAPHIC AND GEODETIC WORKS IN THE CADASTRAL SERVICE //International Journal of Advance Scientific Research. – 2022. – T. 2. – №. 04. – C. 1-6.
14. Khakimova K. R. et al. MAP VISUALIZATION IN ARCGIS AND MAPINFO //Galaxy International Interdisciplinary Research Journal. – 2022. – T. 10. – №. 4. – C. 220-225.
15. Arabboyevna A. M. Biological Activity of Typical Irrigated Gray Soils //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 285-289.