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LIFE CYCLE MANAGEMENT OF CONSTRUCTION FACILITIES

ANALYSIS OF THE LIFE CYCLE OF CULT HISTORICAL STRUCTURES OF THE VORONEZH REGION

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An analysis of the life cycle of three architecturally characteristic churches in the Voronezh region is presented, the history of construction and operation of which is significantly different due to various factors. An example of a verification calculation of a brick vault as the main structural element of the Church of the Exaltation of the Cross is given, in which significant reserves of bearing capacity are identified and the possibility of further safe operation of the structure is justified. A model of life cycle stages is proposed and the main factors influencing the life cycle of religious buildings are established.

Keywords: religious building, life cycle, masonry, stages, brick, verification calculation.

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ECOTRANSFORMATION OF THE UNIVERSITY ENVIRONMENT AT THE STAGE OF RECONSTRUCTION OF THE CAMPUS LIFE CYCLE

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The article provides a set of indicators for assessing the sustainable development of the university environment. An algorithm for managing the process of transformation of the university environment into a biosphere-compatible campus has been developed, taking into account the current situation and the level of functional content of the university territory, as well as an assessment of social, environmental and economic factors of sustainable development. Recommendations are proposed for the implementation of an algorithm for the ecotransformation of the university environment into an innovative biosphere-compatible university.

Keywords: university campus, life cycle, reconstruction, sustainable development, algorithm

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TECHNOLOGY AND ORGANIZATION OF CONSTRUCTION

SOLUTION TO THE PROBLEM OF DETERMINING THE LABOR INTENSITY OF USING INSTRUMENTAL MEASUREMENT TOOLS

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The fundamental task in the course of planning instrumental measurements is the competent forecasting of the terms of execution of the upcoming works. To solve this issue, it is necessary to have information on the labor intensity of control and measuring processes occurring during instrumental control during commissioning, operation and reconstruction. Preparatory processes, including preparation and application of auxiliary equipment, should be taken into account. The presented publication examines the approach to the formation of substantiated information on the labor intensity of using measuring instruments for conducting instrumental control. The result of the study is the development of a multifaceted methodology based on both known solutions and recommendations for targeted data collection with the possibility of developing a modern regulatory and technical base for this area of research. The considered block of scientific research is carried out within the framework of the research area on the formation of a methodology for the selection and substantiation of an optimal set of measuring instruments and auxiliary equipment for conducting instrumental control of industrial and civil buildings during commissioning,

operation and reconstruction. The practical use of the developed provisions ensures a systematic approach to determining the optimal composition, scenario for selecting a combination of methods and means of instrumental measurements and auxiliary equipment in the development of both organizational and technological documentation and in the formation of a work plan for instrumental control of capital construction projects, as well as adjusting the equipment of construction laboratories depending on the demand for specific tasks

Keywords: instrumental control, comprehensive inspection of buildings, technical condition, instrumental measurements, technological processes, work processes, labor intensity, technology of construction production.

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DECISION-MAKING ALGORITHM IN INSTRUMENTAL CONTROL PLANNING

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The presented work describes the existing approaches to the formation of sets of measuring instruments for conducting instrumental control at various stages of the life cycle of buildings and structures. Analyzing various causes of accidents, defects and damages detected during a comprehensive survey of the technical condition, construction and laboratory control at capital construction sites and the volume of potential parameters subject to control, depending on the stage of construction, operating conditions and many other factors, all this requires the formation of a multifaceted and systematic approach to the formation of modern methods for quality control of construction products.

Keywords: instrumental control, comprehensive inspection of buildings, technical condition, instrumental measurements, technological processes, work processes, labor intensity, construction test management

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FACTORS AND INDICATORS OF SUSTAINABILITY OF AN ENGINEERING ORGANIZATION

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In the article, the author considers the factors and indicators of the sustainability of an engineering organization as part of the areas of activity: Engineering and geological surveys, Engineering and environmental surveys, Survey work, Technical customer, Design, Scientific and technical support, Engineering and geodetic surveys, Laboratory quality control; proposed areas-indicators of the sustainability of an engineering organization, the condition of which can be judged about the presence of "nodes of tension" that affect the prospects of the organization, and require consideration of the state of the factors affecting them. For the purpose of his research, the author examines the activities of an engineering organization, including through the prism of trends-indicators of the sustainability of an engineering organization

Keywords: sustainability of an engineering organization, engineering organization, sustainability factors, sustainability indicators, impact assessment of factors, production factors.

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URBAN PLANNING, PLANNING OF RURAL SETTLEMENTS

RESEARCH AND PRESERVATION OF HISTORICAL ENGINEERING STRUCTURES – THE STONE GATES OF THE CITY OF BORISOGLEBSK

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The results of an engineering and technical analysis of the arched structures of the travel gates that have survived to the present time in the city of Borisoglebsk are presented. The archways and passageways in question are embedded in the facade of the fences of private houses, combined with decorative masonry elements and form a single architectural group. A comparative analysis of the static operation of the arches of the most characteristic outlines and the calculation of their bearing capacity was performed, which allowed us to identify the features of their work and draw a conclusion about the operational reliability of stone arches. It is proposed to develop a program for the preservation of stone gates as architectural objects that preserve the historical face of the city of Borisoglebsk.

Keywords: arched structures, travel gates, strut, masonry, architectural monument, restoration, construction technologies

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ENVIRONMENTAL SAFETY OF CONSTRUCTION AND URBAN ECONOMY

THE USE OF GRANULAR BLAST FURNACE SLAG AS AN ADSORBENT FOR CLEANING FLUE GASES OF HEAT GENERATORS OF AUTONOMOUS HEAT SUPPLY SYSTEMS

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The publication is devoted to improving the environmental friendliness of autonomous heat supply systems through the use of granular blast furnace slag for cleaning flue gases of natural gas heat generators from harmful impurities by adsorption. The article presents the properties of the working material, its characteristics, composition and results of experimental studies

Keywords: flue gases, granular blast furnace slag, adsorbent, nitrogen oxides, natural gas, environmental safety

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SYSTEM ANALYSIS, MANAGEMENT AND INFORMATION PROCESSING (IN CONSTRUCTION AND ARCHITECTURE)

ESTIMATION OF PARAMETERS FOR DIGITAL CORE MODELS BASED ON THEIR TWO-DIMENSIONAL SECTIONS

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The article considers a method of statistical evaluation of effective parameters of threedimensional models of porous materials (digital core models) based on a sample of their two-dimensional sections. For selective estimates of the average pore diameter in twodimensional sections, increased values of the standard deviation are noted, but in general, the obtained estimates do not contradict the empirical hypothesis that the information contained in two-dimensional images of external sections of porous material samples is sufficient to predict the hydromechanical characteristics of the digital core model.

Keywords: digital core model, overlapping void model, bulk porosity, surface porosity, pore size distribution

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