

LIFE CYCLE MANAGEMENT OF CONSTRUCTION FACILITIES

INTEGRATION OF INFORMATION MODELING OF THE LIFE CYCLE OF A CAPITAL CONSTRUCTION OBJECT

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The article discusses the importance of digital technologies in ensuring the sustainable development of the construction industry. The use of organizational and technological platforms of construction projects and their integration with innovative information modeling technologies is one of the main directions of the introduction of digital technologies.

Keywords: capital construction, design, digitalization, project information modeling, BIM, life cycle

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TECHNOLOGY AND ORGANIZATION OF CONSTRUCTION

PHYSICAL AND MATHEMATICAL MODELING OF THE MOVEMENT OF SHOTCRETE MIXTURE PARTICLES IN AN ELECTROSTATIC FIELD WHEN APPLIED TO THE SURFACE TO BE SPRAYED

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In the course of the study, a physicomathematical model of the movement of shotcrete mixture particles in an electrostatic field when applied to the printed surface was developed, the corresponding coefficients affecting the parameters of the resulting concrete surface were determined. Analysis of the simulation results shows that the presence of an electrostatic field slows down the particle, reduces the kinetic energy of the rebound.

Keywords: shotcrete, electrostatics, material rebound, particle charging, mathematical model, kinetic energy, adhesion, strength of shotcrete, electrostatic field strength, ideal model

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SCIENTIFIC AND TECHNICAL SUPPORT FOR THE DESIGN OF RECONSTRUCTION OF ENGINEERING COLLECTORS IN NORILSK

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The engineering conditions of reconstructive works on communication collectors in the conditions of permafrost soil distribution on the example of the city of Norilsk are characterized. The relevance of scientific and technical support of design and survey work in these conditions is shown and justified. The list of works on the corresponding scientific and technical support is given. The identified shortcomings of the prepared design and survey documentation are presented. The composition of the analytical report on the results of scientific and technical support of design and survey work is shown. The high importance of geotechnical monitoring in relation to the conditions of design and construction during the spread of permafrost soils is noted.

Keywords: permafrost soils, geotechnical monitoring, engineering reservoir, reconstruction, scientific and technical support

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ORGANIZATION OF WORK ON THE SURVEY AND MONITORING OF THE TECHNICAL CONDITION OF REAL ESTATE OBJECTS USING SYSTEMATIZED TABULAR FORMS

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The paper presents a methodology for surveys of buildings and structures using systematized special tabular forms that allow you to combine the collection, processing and registration of information about the technical condition of the soils of foundations and building structures. The proposed tabular forms cover the main stages of the technical survey and reflect their relationship. The large amount of work carried out by the authors on the survey and examination of buildings and structures over the past five years shows that the use of systematized tabular forms makes it possible to increase the effectiveness of surveys and has certain advantages over the traditionally accepted descriptive form.

Keywords: organization of work, technical inspection and monitoring, systematized tabular forms

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INTEGRATION OF MATRIX-NETWORK MODELS AND COMPLEX OPTIMIZATION CRITERIA INTO THE METHODOLOGY OF SOLVING CALENDAR PLANNING PROBLEMS

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The provisions of the methodology for solving calendar planning tasks for the construction, repair and reconstruction of buildings and structures, with the introduction of matrix-network models, complex evaluation criteria, BIM technologies and artificial intelligence technologies are considered.

Keywords: construction production, matrix-network models, optimization of the calendar plan, compatibility coefficients, calendar design.

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URBAN PLANNING, PLANNING OF RURAL SETTLEMENTS

SUBSTANTIATION OF THE CONCEPT OF ARCHITECTURAL FORMATION OF OPEN PUBLIC SPACES IN THE STRUCTURE OF UNIVERSITY CAMPUSES

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This scientific article examines the typology and factors of the formation of open public spaces on university campuses. The main purpose of the study is to analyze various types of spaces and identify the main factors that influence their successful formation. Factors in the formation of public spaces include: educational needs, social needs, functionality, convenience and accessibility, aesthetics and atmosphere, safety, sustainability and flexibility. The research is of practical importance, as its results can be used in the design and development of university campuses, contributing to the creation of a comfortable and supportive environment for the learning and development of young people. The article considers a project proposal for the formation of an open public space on the example of the campus of the Voronezh State

Technical University in the city of Voronezh. An analysis of the territory is being carried out. The necessary functional zoning of the open space is considered.

Keywords: campus, open public space, park, functional zoning, sustainable development

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ENVIRONMENTAL SAFETY OF CONSTRUCTION AND URBAN ECONOMY

ANALYSIS OF THE PATTERNS OF SPATIAL DISTRIBUTION OF TRAFFIC NOISE IN THE URBAN ENVIRONMENT

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This article discusses methods for calculating reflected noise emanating from motor transport on the territory of various types of buildings. The regularity of the formation of the sound field and its further spatial distribution is established. The noise level in low-rise, multi-storey and mixed types of urban planning solutions is determined, depending on their parameters.

Keywords: traffic noise, urban environment, environmental safety, mainline buildings, sound field.

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

APPLICATION OF A RATING SYSTEM FOR ASSESSING THE QUALITY OF RESIDENTIAL DEVELOPMENT WITH INTELLECTUAL DECISION-MAKING SUPPORT

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This article identifies the main methods of applying the rating system for assessing the quality of residential development (capable of improving the system of pedestrian communications), evaluating the effectiveness of pedestrian spaces (in the context of the current urban development). The models of quality of life assessment are analyzed, in which the methods of translating quality criteria into digital values are presented

Keywords: urban environment, urban environment quality, urban environment, planning, urban management, rating systems, environmental quality index

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