



Abstracts Vol. 2 No. 4

Ewa BERDYCHOWSKA, Krzysztof GAWRON, Bożena HOŁA

Management of hotel real estate in Wrocław city in context of hotel base preparations for the European Football Championships EURO 2012

The paper presents the analysis concerning the development of the hotel investments in Wrocław during the last 20 years, and particularly the activities concerning the organization of the European Football Championships EURO 2012. The authors indicated problems concerning the hotels real estate management, which belong to the wide group of commercial real estate. It was also presented the new outlook on the management of commercial real estate that consists in extension of the scope of interest of real estate with taking into account satisfaction increase of their users.

Joanna DRZEWIECKA, Jerzy PASŁAWSKI

Interference analysis of construction processes

In analysis of distortion causes that might arise during the implementation of a construction project, particular attention should be given to disruption of supply of material on the site. For two examples: building Trails North Bridge in Warsaw – Key Upset high water of the Vistula River and the execution of water supply in rural area – a major factor interfering: high ground water level) are discussed distortions of the project, which greatly complicated the work of the execution of tasks, lengthen turnaround time and increased investment costs. It proposes actions to reduce the impact of disturbances on the implementation of the construction process through the introduction of flexible logistics strategies.

Mirosław DYTCZAK, Grzegorz GINDA, Tomasz WOJTKIEWICZ

Identification of factors influencing delays during realisation of complex construction projects

Punctuality of construction projects influences not only readiness of building objects for exploitation. Tangible economic and intangible e.g. social and environmental issues are also affected. Thus, delays in a construction project usually result in severe consequences for involved stakeholders. Reliable identification of causes and effects of delays is therefore important for discovering of role of objective factors and the stakeholders with regard to emerging delays. Such identification proves helpful for indication and assessment of stakeholders' faults and settlement of a fair punishment. Application of DEMATEL method with this regard is discussed. Included sample analysis deals with a vital construction project.

Jacek GOŁASZEWSKI, Dawid STOLARCZYK

Responsibilities of participants of the building-investment process on the example of Spain and Poland

Realization of the building-investment process is time-consuming, complicated and requires the involvement of many actors. However, the scope of responsibility varies depending on the country in which the design is implemented. The article compares the responsibilities of participants in the of building-investment process in various stages of development of investment on the example of Spain and Poland.

Agnieszka JABŁOŃSKA-KRYSIEWICZ, Marek KRYSIEWICZ

Problems in designing and rebuilding of bridges and culverts

The paper covers problems in designing and rebuilding of bridges and culverts. All bridges should be designed with taking into consideration environmental determinants and requirements of durability. On selected examples of existing objects like bridges and culverts there were shown the practical aspects of their designing and rebuilding.

Piotr JAŚKOWSKI, Sławomir BIRUK

Evaluating surrogate measures of construction project schedule robustness

The actual completion time of construction projects is reported to be rarely in accordance with initial plans. A schedule considered optimal with respect to project duration may become infeasible due to disruptions caused by uncontrollable factors. Deficiencies of the existing methods of project scheduling gave rise to the worldwide search for predictive (or proactive) scheduling that is expected to provide robust schedules (immune to disturbances), thus counteracting instability and “nervousness” of a project plan. A stable schedule with acceptable makespan performance should minimize the instability cost function, defined as the weighted sum of the expected absolute deviations between the predicted start times and the value that the random variable of start time will assume during schedule execution. Computational burden of optimizing this direct measure of schedule robustness in a real-life project environment is quite high. Developing surrogate quantitative measures to provide a good estimate of schedule robustness is essential for building efficient robust scheduling algorithms. For this reasons, the aim of this paper is to evaluate the quality of free-slack-based measures for a benchmark project using Monte Carlo simulation technique. The new approach, to increasing schedule robustness, based on buffer sizing and allocation, is proposed and tested against the existing free-slack times allocation approaches.

Bogusław KACZMAREK

Formulating policy and strategy for ecological development of the enterprise - a sketch of the problem

The paper presents a sketch of a problem of formulating policy and strategy on an enterprise. Two issues are taken into consideration: essence and meaning of ecological management from the point of view of values understood as a stream of resources and lost opportunities (cost), strategy types of strategies of ecological functioning of the enterprise and its meaning for present and future development.

Oleg KAPLIŃSKI

*Problems of construction engineering projects in the light of the survey of Civil Engineering Committee
Section of the Polish Academy of Sciences*

Problems arising in the community of construction engineering and management experts are presented here. Results are based on a survey covering the period 2007-2010. Financial issues involved in research and teaching, and the overview of topics, including research, postgraduate studies, degrees, publications, international cooperation and collaboration with industry are presented. General conclusions have been drawn regarding teaching and learning, on the basis of suggestions presented by the surveyed academic community.

Oleg KAPLIŃSKI, Friedel PELDSCHUS

Socio-economic systems: a school of professor Romualdas Ginevičius

The management of complicated systems, including socio-economic systems (SES), is aimed at achieving their sustainable development. This process can be controlled only if the state of such systems can be quantitatively evaluated. Prof. R. Ginevičius was the first in Lithuania to undertake the research into the problems associated with quantitative evaluation of various types of SES, based on the long-term experience of comprehensive quantitative evaluation of various engineering systems. He investigated and quantitatively evaluated socio-economic development of various states and their regions, the effectiveness of the performance of higher and professional training schools, and determined the strategic potential of enterprises and other institutions.

Tamás KOCSIS, Miklós HAJDU, Orsolya BOKOR

Challenges of the construction industry of transition countries

Construction industry is often criticized around the world, especially in the so-called transition countries. The faults, which it is always accused of, originate from the nature of the projects. These weak points include corruption, cost overrun, inadequate quality, not paying the subcontractors, tax evasion etc. This paper attempts to shed a light on the fact that these phenomena are not new and specific to this area. They have always existed in the history of civilization. The authors can only hope that some time we can overcome these problems that have always darkened the construction industry.

Renata KOZIK, Elżbieta STARZYK

Influence of global economic crisis on public construction orders in Poland

The paper presents public construction orders in the period of present crisis in world economy. Statistical data presented in the paper describing years 2005-2010 show the shape of public construction market. The anticrisis solutions (changes in law) were also described. Analysis presented in the paper allows to ascertain that the influence of economic crisis on Polish public construction orders was insignificant..

Edwin KOŹNIEWSKI, Marcin ORŁOWSKI

Optimum range areas of ready-mixed concrete plants

From a geometrical point of view, areas of optimum range of objects that affect the environment in different ways (providers of production, commercial, social, cultural, educational, rescue, security services) are defined by the Voronoi diagrams in a given metric space (in practice, it is mostly urban space induced by the network of roads). With regard to entities such as ambulance, emergency services (all types), fire brigade, police, and the supply of ready-mixed concrete were discussed in the article, not so much the distance as time is the most essential (and more specifically the time gap). During creating the Voronoi diagrams weighted distance should be used. This paper proposes a method of determining the distance of time (and as a result coverage areas of a concrete plant time range), formulated using the vehicle travel time index in the given time of day. In order to optimize the location of concrete plant special indicators, that measure the time needed to cover the distance time transport intensity, were introduced.

Janusz KRENTOWSKI, Romuald SZELAĞ, Rościsław TRIBIŁŁO

The concept, methodology and realization of specialist remedial work of the municipal swimming pool in the emergency state

In the paper analysis of the completion in the developed concept of repair work of the object was placed finding the swimming pool oneself in the emergency state. In the phase of works under methodology selection simulations with using numerical procedures were used. There was a completion of work in the optimum variant due to the global state of the carrying capacity and sedatenesses of the structure. Performed analysis enabled preventing the built disaster and the completion of repair works was conducted with using specialist protection measures in untypical conditions of distresses. In the phase of restoring the safe state of the carrying capacity lightened roof girders were used.

Janusz KRENTOWSKI, Romuald SZELAĞ, Rościsław TRIBIŁŁO

Reinforcement design and revaluation of the antique shell-rib brick vaults

The studies were made upon brick vaults in the historical building. The analysis of the defect morphology occurring in the form of cracks of brick arches and cross vaults was done. Authors indicated the origin of damage resulting from the user activity in destroying some parts of bearing structures. The concept of structural elements strengthening was presented. Renovation of architectural monument was designed to preserve and disclose the historical and aesthetic values while respecting the authentic substance. Complementation of the existing, extensively damaged substances was scientifically justified, because the base of reinforcing works was a historical substance, which should remain in the form of so-called "witness".

Mariola KSIĄŻEK

Use of the multicriteria methods for investigation assessment in decision-making process

Assessment of different types of investments is particularly difficult due to their complexity. The selection of different variants of solutions is described by the technical-economic units. The relevant characteristics of the investment, defined quantitatively or qualitatively, is very important. During the project planning and preparation stage often happens that the desired values of certain criteria are estimated, difficult to measure and subjective, which is stated as "good", "much better", etc. Selected group of multi-criteria evaluation methods was analysed. These methods may be a useful tool for the evaluation of investment options in a given decision-making process.

Janusz KULEJEWSKI, Jacek ZAWISTOWSKI

Time buffer size simulation stabilizing construction schedules

This paper presents the method for the determination of time buffers, stabilizing construction schedules against disruptions during execution of a construction project. The method is based upon the idea of simultaneous simulation and optimization procedure. For the optimization of buffers sizes under given time constraints for the project execution, the taboo search metaheuristic was used. The method significantly speeds up the appointment of time buffers and allows for the rationalization of their sizes, in proportion to the mean share of the cost of instability of start date of given activity in the mean cost of the project instability. In addition, the implementation of simultaneous simulation and optimization procedure yields the solution which fully protects the planned completion date of a project against random variations of durations of works.

Agnieszka LEŚNIAK, Edyta PLEBANKIEWICZ

Selection of management company in construction public sector investments

Polish public investors choosing a project organizational system with the participation of a management company apply one of the solutions: employing a replacement investor or employing an Engineer (if the FIDIC forms of contract are used). Both cases they have to make a choice under the Public Procurement Law. The paper discussed method using by public investors for selecting of the management company. The analysis shows that the primary mode of selection used by public investors is an open tender where the only one criterion for assessing the bid of management is the price.

Mikołaj MALESZA, Czesław MIEDZIAŁOWSKI, Jarosław MALESZA

Buildings in the light wood-framed technology formation and construction

Selected problems of formation, static analysis and construction of buildings in the light wood-framed technology are presented in the paper. Paper presents different methods corresponding to technologies of construction of the wood-framed with sheathing buildings. Modern directions and tendencies in modelling of the wood-framed structures and an exemplified analysis of investigated in natural scale building are also included in the paper. The second part of the paper presents methods of building production and assembling in the form of traditional element-to-element setting as well as the method of the large panel industrially manufactured and then assembled on the site, creating whole building structures.

Roman MARCINKOWSKI, Artur KOPER

Planning group of machines to provide continuity concreting of monolith structures

The article presents a model of project task that can rule an optimal quantity of machines and transports to provide continuity concreting of monolith construction. This model with a spreadsheet program allows optimizing time and cost of concrete works realization on single out front works (section prepares to concrete). For the solution of task we suggest to take an evolutionary algorithm or computer simulation.

Wiesław MESZEK, Agnieszka DZIADOSZ

The influence of inefficiency of property market on the accuracy of description of property value using linear models of multiple regression

The evaluation of the market value of the property is mainly based on transaction prices which should reflect its characteristic features. In the case of an efficient market, the property price reflects its true value. However, it is more often the case to deal with an inefficient market (within different scope and to a different degree) during the evaluation procedure, which determines its accuracy. This paper contains an example of statistical analysis of a selected property base with the emphasis put on previously mentioned issues concerning the inefficiency of the market using reliability evaluation coefficient.

Andrzej MINASOWICZ, Bartosz KOSTRZEWA

The time-cost analysis of the construction project based on fuzzy sets

The proposed analysis aim is to review a detail risk for a given project at the stage of value engineering of the integrated value and risk management. On the basis of the cost estimation and the time schedule establishing, for individual groups of works, the cost or time deviations for each task are specified. Expert knowledge is used for this purpose. In order to transform the input information, it is necessary to introduce fuzzy modelling, which includes fuzzification, inference and defuzzification processes. The proposed procedure allows for automatic determination of optimistic and pessimistic project scenarios with regard to both time and cost, using simple math operators like the arithmetic average and the center of mass. In this way, we obtain the quantified risks associated with time and cost of the project, which allows for comparison of several technologies for implementation of the same project and selection of the most optimum variant.

Maciej MORKA

Factors affecting the condition of the job safety on the construction site

Conditions existing in the work place determine the job safety. Dangerous conditions can lead to accident which consequences can be death, serious body injury of worker or material damage. Chosen issues are placed in the article from scope of accidents in the construction and classification of dangerous, harmful and arduous factors on construction site. There is also written about areas which should be under special attention during preparation and execution of the construction work.

Jerzy OBOLEWICZ

EFQM model utilization for safety and health protection in building enterprises

The author presents the conception of EFQM model utilization for safety and health protection management in building enterprises as a tool of opinion. It permits to estimate place on which the company exists on its way to perfection, show tasks and find solutions that lead to company result improvement. The use of EFQM model can contribute to bearing the of safety and the of health in building.

Jerzy OBOLEWICZ

The opinion of state of safety and the protection of health in building enterprises

The author characterizes the process of creating the EU-27 statistics and the union model of incidents for statistical aims. The statistics of incidents as well as analysis of causes of their rise in Poland are shown. The kind of indispensable information based on received data defines state of safety and health protection in building enterprises and the tool to execution of investigations. On the basis of investigation results it was made the opinion about state of safety and health protection in building enterprises.

Hartmut PASTERNAK

Sustainable restoration of the roof of a large indoor pool

During an inspection of the roof of an indoor pool from 1971 in Potsdam (Germany) it was observed, that the roof and the column structures of the building are partially damaged by corrosion. The roof construction is a suspended simple-bent pre-stressed shell between two stiff edge beams. The span of the roof is 39.5 m. The edge beams are supported by A-frames. After further investigation on the damaged areas (including tension tests, tension tests on notched tendons with different load cycles, tests of the bearing capacity of sleeve splices and screw nuts) the conclusion was that the joint of the tension rod and the concrete column had to be restored. This was accomplished through the attaching of a new supporting construction to the existing parts, which took over the load from the old connection. At both sides of the columns pre-stressed DYWIDAG-single-tendons (St1080/1230, diameter of 36 mm) were used. They have to bear a maximal tension force of 835 kN. With this unusual restoration technique, a fast and relative inexpensive retrofitting of the construction could be carried out. The existing construction had to be modified only marginal, and the typical appearance of the building was preserved. This solution stands for sustainability.



Iwona POSADZIŃSKA

Areas of social responsibility of building enterprises

The problems of social responsibility were presented in paper as an aim of the functioning and development of building enterprises. Due to the specific guilds of building activity the commitment in area of environment protection as well as the credibility and the confidence in contacts from the participants' different groups stand up the most essential. The investment character of building undertakings, changeability of places of undertaken activity as well as the diverse dependent complexity from range of works were favourable to the variety of connections and the correlation on building market. It should be considered in context management organization inside leaning on confidence management, as and its report with surroundings: customers, tradesmen, society, media or different participants. The trust states the source of competitive superiority.

Michał RUTKOWSKI, Andrzej SKARZYŃSKI

Issues of the shopping and entertainment centre realisation on the example of the Galeria Malta in Poznan

The general characteristics of shopping and entertainment centres was presented. Then based on the specific features of implementation of this kind of objects were done. Phase before implementation with particular emphasis on location, as well as the implementation phase of the object containing the most problems what is obvious were distinguish. However, most space of the paper is devoted to the discussion of issues of the construction of the exemplary investment. It is the Galeria Malta in Poznan.

Anna SOBOTKA, Paweł JASIAK

The risks consideration in the time assessment in offer for historic building revitalization

There is a high risk in the assessment of costs and performance during of planning for the historic building revitalization. This is particularly troublesome in investments made with public funds. The paper presents an analysis of the evaluation time of the historic building revitalization taking place in Krakow. To estimate the time of processes and assess the likelihood of keeping the term of the investment – the PERT method is used, commonly known but seldom used in practice. Observation of the ongoing execution of the construction allows to compare the results with the actual planning of construction works and justifies the use of models that reflect the uncertainty and risk, allowing for more accurately prediction of construction time.

Anna SOBOTKA, Daniel WAŁACH

The conception of usage of supply chain management method in construction projects

The application of modern management methods for construction projects allows to improve its productivity. A supply chain management is one of these methods. SCM can thus be seen as a management philosophy flows throughout the entire business process focused on customer satisfaction, collaboration, and maximizing profits of any organization in the chain or network of multiple businesses and relationships. Attention was drawn to apply the solutions of supply chain management concept in product development, which is the end result of a construction project - the object or objects and more - through services on the basis of constructed objects. The example of the application of innovative solutions in the so-called product/project delivery during execution of road construction was discussed.

Elżbieta STRZELECKA

Urban revitalization in the context of sustainable development

Urban and brownfield revitalization carried out mainly under EU's programmes IROP and JESSICA significantly contributes to local development, thus becoming part of sustainable development. The article compares examples of revitalization from Lodz and Poznan in terms of their compliance with the principle of sustainable development. Various aspects of the revitalization programmes are analysed: terminology, assessment criteria, the course and content of revitalization processes, selected laws and the status of planning work in the communes.

Mikołaj SYCZEWSKI

Conversion of reinforced structure of the graphic factory building to modernized technological process

In paper the conversion of open production building to the new technological process was worked out. The load on the ceiling in new technological process was three times higher than acceptable. The adaptation method based on fitting new construction into existing one was worked out. The construction was done, new machine was installed and production according to new technological process was started.

Mikołaj SYCZEWSKI

Problems of technical exploitation in old multi-family buildings after modernization of their roofs

In multi-family buildings after replacing ceramic tiles with metal tiles, in winter periods, intensive icing of rain pipes, outlet pipes and parts of the roof near eaves were appeared. Damp patches on the external walls and in flats were appeared too. In paper the reasons of coming out of this destructive phenomenon were identified and ways of their elimination were presented.

Aleksandr VASILEV

Estimation and forecasting the state of degradation for reinforced concrete structure

Based on author's research the way of estimation of the building reinforced concrete structure and forecast its degradation state were worked out in the paper. Proposed method can be used to estimate of existing old building condition, in which long breaks in its execution were occurred and in the cases of reconstruction, renovation and revaluation of buildings and reinforced concrete structures.

Marek WIRKUS, Roman TRZCIŃSKI

Efficient management of claims in civil engineering

Publication shows theoretical and methodological aspects of efficiently applying Claim Management in civil engineering. The described research can evaluate crucial factors of applying the new concept of Claim Management in small and medium construction companies. The research methods applied are: pilot study of applying Claim Management methods in construction company which hires 120 employees; individual interviews with the management of this company as well as questionnaire survey of different subjects of construction asking about applying this innovation. The research period as well as the field of research is small but the results of increasing efficiency in acquiring additional income from applying the claim administration indicates that it is purposeful to use and improve the new Claim Management concept. The results indicates also that it is necessary to carry on further research to perfect this method. Modern Claim Management should become the universal tool which through risk analysis, sets and changes helps to deal with claims in construction business.

Marek WIRKUS, Tadeusz WĘSIERSKI, Anna CHMIELARZ

Waste of machinery at the construction site

The paper describes some problems of inefficient use of machinery in the construction process. If you look at it from the perspective of Lean Management, this is the source of waste. This is the reason for which authors attempted to formulate guidelines to reduce waste. Lean Tools and results of empirical research were used to prepare these guidelines. However, it was only an initial study to validate the method of analysis of the shared part of the resources in the construction process. But the results in conjunction with heuristics gave the new quality guidelines of Total Productive Maintenance (TPM). Index of the Overall Equipment Effectiveness (OEE) was used to measure the efficiency of machines. Specific research focused on the excavators and cranes. The article presents some solutions to increase efficiency and reduce waste of these machines work.