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Radosław DUDA

Concrete and steel work in combined steel concrete elements

The article presents the current state of knowledge regarding the cooperation of steel-concrete composite columns composed of a concrete filled steel tube (CFST). The most important, from the point of view of work construction, is the high load-bearing capacity of CFST elements resulting from the so-called the confinement effect of lateral deformation of the concrete sealed inside the steel pipe. It should be noted that concrete, despite limiting the impact of environmental impacts, is subject to autogenous contraction, which in time leads to a deterioration of steel-concrete cooperation.

Marta NAZARCZUK

Evolution of systems of timber structures in multi-storey buildings

In the article the evolution of timber structures in multi-storey buildings in recent years is presented. Prefabricated timber frame structures, also modular, CLT structures and mixed structures are described. Furthermore, the overview of new timber-based materials and fixings is involved.

Agnieszka TRĘBICKA, Wojciech KRUSZYŃSKI

Variability in time of the characteristic parameters of the water distribution system and their impact on changes in the water age

The increase of requirements concerning quality and time of realization in the scope of design studies require the introduction of computer technology in calculations. The work presents processes based on mapping and refinement of specific conservative states of the water distribution system (SDW), using mathematical modelling taking into account the latest available computer techniques. There are also solutions to integrate measurements of water supply networks with GIS. The subject of application is the Łapy water supply network. The EPANET program was used in the work. The scope of the study included the network model analysed for the basic quality parameters that should be met by the network, such as: flow rates, pressure, unit losses, water age and working conditions during simulated network failures broken down into scenarios.

Victar TUR, Dimitry MARKOUSKI

Reliability level of reinforced concrete members designed according to Belarusian national annexes to structural Eurocodes

The article presents the results of reliability analysis of reinforced concrete structures designed and built in accordance with design codes that are valid in Belarus. It is noted that such structures have different reliability levels as well as failure probabilities. Approaches to assessment actions on structures, which stated in European and Belarusian codes were analysed. It is shown that in most cases codes, which are used for designing of the existing structures do not meet the modern requirements for safety of structures. Additionally the results of reliability-based calibration of partial factors using in precast concrete members design are presented. The calibration resulted in the reduced value of partial factors for permanent loads on precast elements.

Małgorzata E. WYSOCKA

GPR using for location anthropogenic changes in substrate

The paper presents the results of research using georadar. The paper aim was to locate anthropogenic changes occurring in the substrate. The tests consisted of field tests carried out using 500 MHz and 900 MHz antennas, followed by digital processing and interpretation of echograms. In the GPR method, the necessary factor in registering a useful signal (information) is the contrast to the dielectric constant between the center and the object being sought. Conducted research and analysis showed that the appropriate selection of antenna and settings is one of the most important tasks when using a GPR. The knowledge and practice of the person making measurements and analysis are necessary.