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Abstracts
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Piotr BRZOZOWSKI
Examination of fly ash from fluidized bed boilers in underwater concrete

Laboratory test results of mechanical properties of underwater concretes were presented in the paper. In these concretes some part of cement was substituted by fluidal ashes from hard coal combustion. The relationships between the tensile and compressive strengths, and efficiency factor of fluidized bed ash were discussed.

Iwona CHMIELOWSKA
Stability of t-shaped retaining wall according to Eurocode 7

The stability of a T-shaped retaining wall with dry backfill is analysed in this paper. The bearing and sliding are treated as GEO limit states in accordance with Eurocode 7. The rotation is treated as EQU limit state. The stability for bearing, sliding and rotation is secured, if geometry of the wall is designed based on engineering practice. The analysed T-shaped wall can be treated as a proof of rightfulness of procedures and practical factors given in Eurocode 7.

Robert CZUBASZEK
Flora of the inpetland dunes located in the Biebrza River Valley and the Narew River Valley

The paper presents the results of the studies conducted on eight selected inpeatland dunes located in the Biebrza River Valley and the Narew River Valley. The aim of the studies was to describe the plant communities growing on these terrestrial forms. Based on the numerical analysis of 42 records made on dunes, two types of plant communities were identified. They were classified as distorted forms of the oak-hornbeam forest *Tilio-Carpinetum* and secondary forest of the *Tilio-Carpinetum* circle. First community is characterized by fully developed vertical structure and by the majority of plant species typical for the oak-hornbeam forest. The deformation of this kind of forest is marked by the participation of plants connected with human activity. In the second recognized plant community, tree layer has not formed yet and accompanying species and the meadows species from the *Molinio-Arrhenatheretea* class dominates in the herb layer.

Robert CZUBASZEK, Karolina BARTOSZUK
Content of selected heavy metals in soils in accordance with itsdistance from the street and land use

The paper presents the results of research concerning content of the selected heavy metals (Pb, Ni, Cr, Cd i Cu) in soils along the Świerkowa Street in Białystok. The aim of the studies was to determine the content of five heavy metals in soil as well as examination how flora can reduce the spread of the pollutant emitted from the cars. The research results show a little soil pollution. The highest concentration in surface soil layer was found in the case of lead, while the lowest concentration of copper revealed. Plant communities growing along the street have significant impact on the reduction of heavy metals concentration in soils. The samples taken from the forest were characterized by lower concentration of metals in comparison to those taken from area of the Bialystok University of Technology campus, where the plant cover was much lower. The reduction of element content in samples from the Zwierzyniecki Forest could be caused by increase of its solubility and availability in acid forest soil.

Wojciech GOSK
Nonlinear soil model application for identification of the stiffness modus of the subsoil under impact load

The behaviour of the limited soil bulk under the mass impact is analysed in the paper. The laboratory research results obtained by means of the light drop tester ZFG-01 were taken to the analysis. The main aim of this paper was identification of the stiffness modulus of the subsoil. The analysis was carried out on the basis of the numerical program for non-linear model of the ground.

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Julita KARWOWSKA, Andrzej ŁAPKO
The usefulness of modern fiber – reinforced concrete in bulding structures

The use of concrete additives in the form of fibers is becoming more common. They cause an increase in the tensile strength of concrete and changing the nature of the destruction of the concrete, which determine the safety, durability and suitability of structural members. Depending on the nature of the structure and environment, there are used different type of fibers. The aim of this paper is to discuss the material characteristics and the range of application of fiber composites in building structures. The needs of investigation on structural members made of fiber composites are stressed in the paper too.

Marta KOSIOR-KAZBERUK
New mineral additions for concrete

The wider and wider usage of alternative fuels as well as the thermal mineralization processes in different industrial sectors generates large amounts of new waste-materials. The ecological and economic reasons result in the increase in the interest in potential utilization of ashes arising in these processes. The possibility of application of new waste-materials as active addition to mortar and concrete is analysed in the paper. The selected properties of cement composites containing ashes, originating from the combustion of sewage sludge as well as from co-combustion of the vegetable biomass and the coal were compared to the characteristics obtained for materials with the coal ash.

Jarosław MALESZA
Influence of material parameters on static work of reinforced concrete frame joint

Influence of concrete strength characteristics on stress distribution in the external corner of the reinforced concrete monolithic frame is presented in the paper. Results obtained in investigations displayed unprofitable influence of deviations from designed assumptions on static response of structure, specifically on decreasing of the structure load bearing capacity.

Jarosław MALESZA
Influence of stiffness changes and joint deformability on redistribution of internal forces in multistorey framed structures

Paper presents analitycal model taking into account joint deformability and stiffness changes of R.C. framed structure. The aim of the work is to determine the method of description of the structure statical model including cross-section stiffness changes and joint deformability. An analitycal example presenting influence of the cross-section stiffness changes and joint deformability on redistribution of internal forces is shown in the paper.

Marzena MATEJCZYK, Monika SUCHOWIERSKA
Characteristics of the phenomenon of quorum sensing and its meaning in terms of formation and functioning of biofilm in environmental engineering, civil engineering, medicine and household

In the paper characteristics of phenomenon of *quorum sensing* on base of current literature was done. *Quorum sensing* means sense of presence in literal meaning and it plays significant role in process of formation and functioning of biofilm. *Quorum sensing* is a special kind of communication system between microorganism with participation of chemicals. It is controlled by definite genes in answer on numerical force of population of microorganisms. Biofilm functioning is strictly connected with damages of sanitary equipment, housekeeping, construction materials. Knowledge of mechanism of biofilm creation will allow for elaboration of forceful technology of battle with its result of harmful interaction in environmental engineering, construction as well as in daily life of person.

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Jerzy OBOLEWICZ
The problems of formation of safety system and health protection on the building industry

The paper aim was to characterize the problems of formation safety system and health protection in the building industry. The proposal to ordering and synthesizing the factors that affect safety and health protection was described in the paper. Principles, actions, priorities and procedures within the area of safety and health were given, Basic concept and principles of design and implementation of system in the building industry were shown.

Piotr RYNKOWSKI, Tomasz Janusz TELESZEWSKI
Modelling of temperature field in cold bridge by means of boundary element method

In the paper the model of temperature field in cold bridge is discussed using Boundary Element Method. The equations describing the steady heat conduction problem in cold bridge have been solved. Presented examples show efficiency of Boundary Element Method modelling in cold bridge in comparison with mesh method as Finite Difference Method, Finite Element Method or Finite Volume Method.

Mariola WASIL
Compressibility of saturated fly ash

The usefulness of fly ash for earth structure is determined on the basis of its geotechnical properties, inter alia, the compressibility. The compressibility depend on fly ash water-saturation. The results of compressibility, tested on compacted fly ash, are shown in the paper. Fly ash samples were compacted at moisture contents $w_{opt} \pm 5\%$. Research was carried out in Rowe's consolidation cell. Saturation of fly ash was established both on the basis of degree of saturation S_r and Skempton's parameter B.

Anna ŻAKOWICZ, Michał BASZEŃ
The influence of changes in material characteristics and wooden structure geometry on distribution of internal forces

The paper aim was to describe the factors affecting changes of material and geometric properties in components of timber structures. The influence of stiffness changes of components and joints on the value of the internal forces, displacements and the bearing capacity of structural elements were analysed. Comparative analysis using different types of joints was performed for the lattice girder and two-storey warehouse frame.