

Contents

Vestnik grazhdanskikh inzhenerov 2016 5 (58) October Bulletin of Civil Engineers

BUILDING AND ARCHITECTURE

ARCHITECTURE, URBAN PLANNING, DESIGN

- D. S. Ivanov.* Taking into account the views of consumers of the first mass series apartment houses at determining reconstruction activities 5
- Yu. I. Kurbatov.* The Leningrad neoclassicism of the 1930–1940-s as an outstanding contribution to creation of architecture including both novelty, and continuity 13
- L. P. Lavrov, F. V. Perov.* High-rise buildings: the wrong vector of housing construction development 16
- V. K. Linov.* The principles of organizing sub-centers in the Saint-Petersburg polycentric agglomeration 28
- O. P. Fedorov.* Evolution of using the wind power plant (WPP) as an element of composition in architecture and urban planning 36

BUILDING DESIGNS

- S. I. Mironova, A. V. Tikhomirov, S. E. Kiryutina.* Research of single-component polyurethane resin glue on compliance to the 2nd class of the functional purpose of wooden glued designs 44
- V. I. Morozov, E. K. Opbul.* Calculation of steel-fiber-reinforced concrete members subjected to bending according to the nonlinear deformation model using test deformation diagrams of steel-fiber-reinforced concrete 51
- D. M. Udalov.* Interface of the member subjected to bending fixed to the reinforced concrete base by using chemical anchor 56
- S. V. Fedosov, V. Ye. Rumyantseva, V. S. Konovalova.* Study of corrosion destruction processes of reinforced concrete products in aggressive environments containing chloride ions 61

STRUCTURAL MECHANICS AND CALCULATION OF STRUCTURES

- R. S. Bezborodov, G. S. Shul'man.* Imitation model of seismic loading on the equipment in the building with a sliding belt 68
- L. M. Kagan-Rosenzweig, P. A. Kovaleva.* Concerning the bending rigidity of reinforced beam column 75
- A. A. Kotov.* Research of the concrete beam by the finite element method 79
- G. N. Shirunov, Sh. S. Tugutov, A. Nidzhad, D. A. Sarvilin.* Comparative analysis of convergence of 3D FEM models for the problem of bending a thick isotropic plate with clamped edges 86

GEOENGINEERING

- R. A. Mangushev, R. A. Usmanov.* Design of the vibro-formed piles in the conditions of weak water-saturated loess soil 96

SANITARY ENGINEERING AND ECOLOGY

- V. K. Averyanov, S. M. Anisimov, M. A. Kanev.* The study of heat and mass transfer process in the evaporative humidifier by experimental and numerical methods 105
- A. V. Akmentina.* Guidelines for calculating sequencing batch reactors with wastewater upflow and consistent nitrification-denitrification process 110
- A. V. Malkov.* Calculation of the amount of gas moving in sewer network under the action of leading ability of the fluid and the pressure difference across the ends of the settlement area (natural draft) 115

Scientific-technical peer reviewed journal

The Founder — the Federal State Budgetary Educational Institution of Higher Education "Saint-Petersburg State University of Architecture and Civil Engineering" (SPSUACE)

The Editor-in-Chief

Ye. I. Rybnov, Dr. Sci. Ec., Professor, Honorary Worker of Higher School of the Russian Federation (SPSUACE)

Assistants to the Editor-in-Chief

Yu. P. Panibratov, Dr. Sci. Ec., Professor, Winner of the State Award of the Russian Federation and the Award of the Government of the Russian Federation, Honorary Worker of Sciences of the Russian Federation, Academician of RAACS (SPSUACE)

Ye. B. Smirnov, Dr. Sci. Ec., Professor, Honorary Worker of Higher School of the Russian Federation (SPSUACE)

V. I. Morozov, Dr. Sci. Tech., Professor, Winner of the Award of the Government of the Russian Federation (The Senior Editor) (SPSUACE)

Editorial council

A. A. Akaev, Dr., Prof., Foreign Member of the RAS (Lomonosov Moscow State University, Russia)

L. Ungvari, Dr. Sci., Professor, (Technical University of Applied Sciences Wildau, Germany)

N. V. Kazhar, Dr. Arch., Professor (Czestochowa University of Technology, Poland)

G. Kipiani, Dr. Sci. Tech., Professor (Georgian Technical University, Georgia)

H. V. Tokmajyan, Dr. Sci. Tech., Professor, Rector of SEUA (State Engineering University of Armenia)

J. Eberhardsteyner, Dr. Sci. Tech., Professor (Vienna University of Technology, Austria)

S. N. Leonovich, Dr. Sci. Tech., Professor (Belarusian National Technical University, Belarus)

Y. Iwasaki, Dr. Sci. Tech. (Geo-Research Institute, Japan)

T. Tanaka, Dr. Sci. Tech., Professor (University of Tokyo, Japan)

A. Zh. Zhushupbekov, Dr. Sci. Tech., Professor (L. N. Gumilyov Eurasian National University, Astana, Kazakhstan)

Editorial Board

05.23.00 - Building and Architecture

G. V. Yesaulov, Dr. Arch., Professor, Academician of RAACS

Yu. V. Zaytsev, Dr. Sci. Tech., Professor, Winner of the Award of the Government of the Russian Federation, Extraordinary and Plenipotentiary Ambassador

F. V. Karmazinov, Dr. Sci. Tech., Professor, Winner of the Award of the Government of the Russian Federation (SUE "Vodokanal of St. Petersburg")

N. I. Karpenko, Dr. Sci. Tech., Professor, Winner of the Award of the Government of the Russian Federation, Honorary Worker of Sciences of the Russian Federation, Academician of RAACS (NIISF RAACS)

L. S. Lyahovich, Dr. Sci. Tech., Professor, Honorary Worker of Sciences of the Russian Federation, Academician of RAACS (TSUAB)

V. Sargsyan, Dr. Sci. Tech., Professor (National University of Architecture and Construction of Armenia)

V. I. Travush, Dr. Sci. Tech., Professor, Winner of the Award of the Government of the Russian Federation, Academician of RAACS (RAACS)

V. S. Fedorov, Dr. Sci. Tech., Professor, Academician of RAACS (MSURE)

S. V. Fedosov, Dr. Sci. Tech., Professor, Winner of the Award of the Government of the Russian Federation, Honorary Worker of Sciences of the Russian Federation, Academician of RAACS (IVGPU)

E. M. Tchernyshov, Dr. Sci. Tech., Professor, Honorary Worker of Sciences of the Russian Federation, Academician of RAACS (VSUACE)

M. I. Alekseev, Dr. Sci. Tech., Professor, Winner of the Award of the Government of the Russian Federation, Honorary Worker of Sciences of the Russian Federation, Academician of RAACS

G. I. Belyy, Dr. Sci. Tech., Professor, Honorary Worker of Sciences of the Russian Federation
 B. G. Vager, Dr. Sci. Phys.-Math., Professor, Honorary Worker of Higher School of the Russian Federation
 A. A. Veselov, Dr. Sci. Tech., Professor
 T. A. Datsuk, Dr. Sci. Tech., Professor
 S. P. Zavarikhin, Dr. Arch., Professor, Honorary Architect of the Russian Federation
 B. N. Karpov, Dr. Sci. Tech., Professor
 L. N. Kondrat'eva, Dr. Sci. Tech., Professor
 L. P. Lavrov, Dr. Arch., Professor, Honorary Architect of the Russian Federation, Correspondent Member of RAACS
 R. A. Mangushev, Dr. Sci. Tech., Professor, Honorary Worker of the Higher School of the Russian Federation, Correspondent Member of RAACS
 A. M. Maslennikov, Dr. Sci. Tech., Professor, Honorary Worker of Sciences of the Russian Federation
 S. N. Nikiforov, Dr. Sci. Tech., Professor
 Yu. V. Puharenko, Dr. Sci. Tech., Professor, Winner of the Award of the Government of the Russian Federation, Correspondent Member of RAACS
 S. V. Sementsov, Dr. Arch., Professor
 V. D. Kharlab, Dr. Sci. Tech., Professor
 V. M. Ulyasheva, Dr. Sci. Tech., Professor
 V. M. Petrov, Dr. Sci. Tech., Professor (SPSUACE)

05.05.00 – Transport Engineering, Mining Machinery Manufacturing, Construction Machine Building
 V. V. Verstov, Dr. Sci. Tech., Professor, Honorary Builder of Russia
 S. V. Repin, Dr. Sci. Tech., Professor
 V. E. Gordienko, Dr. Sci. Tech., Professor
 S. E. Maksimov, Dr. Sci. Tech., Professor
 I. I. Vorontsov, Dr. Sci. Tech., Professor
 A. E. Pushkarev, Dr. Sci. Tech., Associate Professor
 A. N. Lyalinov, Dr. Sci. Tech., Professor
 V. N. Gorshkov, Dr. Sci. Tech., Professor (SPSUACE)
 P. V. Druzhyinin, Dr. Sci. Tech., Professor, Honorary Worker of the Higher School of the Russian Federation (KMAL)
 V. A. Kuz'michev, Dr. Sci. Tech., Professor (SPbPU)

05.22.00 – Transport
 S. A. Evtuyukov, Dr. Sci. Tech., Professor, Honorary Worker of Higher School of the Russian Federation
 P. A. Kravchenko, Dr. Sci. Tech., Professor, Honorary Worker of the Higher School of the Russian Federation
 V. N. Dobromirov, Dr. Sci. Tech., Professor
 Yu. G. Kotikov, Dr. Sci. Tech., Professor
 A. V. Bondarenko, Dr. Sci. Tech., Professor
 A. A. Kapustin, Dr. Sci. Tech., Professor
 B. D. Efremov, Dr. Sci. Tech., Professor
 R. N. Safullin, Dr. Sci. Tech., Associate Professor (SPSUACE)
 V. S. Lukinskiy, Dr. Sci. Tech., Professor (HSE in St. Petersburg)
 V. N. Lozhkin, Dr. Sci. Tech., Professor, Honorary Worker of Sciences of the Russian Federation (Saint-Petersburg University of State Fire Service of EMERCOM of Russia)

08.00.00 – Economics
 A. N. Asaul, Dr. Sci. Ec., Professor, Honorary Builder of the Russian Federation, Honorary Worker of Sciences of the Russian Federation
 I. V. Drozdova, Dr. Sci. Ec., Professor
 G. A. Tokunova, Dr. Sci. Ec., Professor
 A. A. Petrov, Dr. Sci. Ec., Professor
 N. G. Pletneva, Dr. Sci. Ec., Professor
 A. P. Dolgov, Dr. Sci. Ec., Professor
 A. I. Solodkiy, Dr. Sci. Ec., Professor
 V. V. Asaul, Dr. Sci. Ec., Professor
 E. G. Guzhuva, Dr. Sci. Ec., Professor (SPSUACE)
 G. F. Shcherbina, Dr. Sci. Ec., Associate Professor
 CEO (AO SSMO "LenSpetsSMU")
 L. M. Kaplan, Dr. Sci. Ec., Professor
 (St. Petersburg Union of Construction Companies)
 R. A. Faltinskiy, Dr. Sci. Ec., Professor,
 Adviser to CEO (OJSC Gazprompromgaz)
 The address of the Founder and the Editorial Office:
 2nd Krasnoarmeiskaia St. 4, 190005, St.-Petersburg, Russia
 Ph./ Fax: (812) 575-09-17, (812) 316-53-11
 E-mail: vestnikspb@mail.ru
 The contents and abstracts of articles are presented on the site: <http://vestnik.spbgasu.ru>
 The journal is registered by the Federal Service for Supervision of Communications, Information Technology and Mass Media (Roskomnadzor). The registration certificate of the mass media organization is ПИИ № ФС77-61236, of 03.04.2015.
 The journal is included by the Higher Attestation Commission (HAC) of the Russian Federation into the List of leading reviewed scientific journals and editions in which the major scientific results of theses on competition for the academic degree of the Doctor of Science are to be published.
 In case of reprinting, the link to the "Vestnik grazhdanskikh inzhenerov – Bulletin of Civil Engineers" is obligatory.
 On the cover one can see the monument to Nicholas I, the Emperor, in honour of whom the Institute of Civil Engineers (nowadays SPSUACE) was named on December 17, 1892.

DESIGN AND CONSTRUCTION OF ROADS, SUBWAYS, AIRFIELDS, BRIDGES AND TUNNELS

V. A. Gromov. Substantiation of the required strength and reliability of road construction based on imitation simulation..... 120
 R. V. Kumashov. Static calculation of reinforced concrete pavement slabs of motor road clothes on an elastic foundation 127

TRANSPORT ENGINEERING, MINING MACHINERY MANUFACTURING, CONSTRUCTION MACHINE BUILDING

Sh. A. Karimov, Eh. A. Umarov. Research and selection of composition of lubricant coolant liquid for processing parts with disk tools with a hard alloy surface layer..... 133
 N. V. Polianichko. Recommendations for selecting rational parameters of the rotary device for compaction of the ballast layer . 137
 S. V. Repin, R. A. Litvin. Simulation of controlling oscillations process in the vibration construction machines by using hydraulic shock absorbers..... 142

TRANSPORT

N. A. Kalyuzhny. About the use of high-speed rail transport in transport systems of the world largest agglomerations..... 150
 S. K. Korabelnikov. Perspective fast growth points in the land transport personnel training..... 163

ECONOMICS

M. V. Demidenko, A. S. Filippov. Models of implementing investment and construction projects and taking them into account at the contractor selection process within the public procurement system..... 169
 E. V. Kulagovskiy. Methodological tools for risk assessment of industrial enterprises..... 181
 A. S. Lushnikov. Evaluating the efficiency of using the information modeling technology at the implementation of investment and construction projects..... 186
 V. P. Ofin, I. A. Provotorov. Advantages and disadvantages of involving foreign investors to participation in projects of public-private partnership in the Russian Federation 195
 Zh. G. Petukhova. The implementation of the principles of openness and transparency at the formation of the business state support policy 201
 V. I. Frolov, S. V. Balzanay. Algorithm of monitoring and adjusting the parameters of the project of the highway construction at the use of public-private partnerships..... 210

INFORMATICS AND COMPUTER FACILITIES

L. K. Narbut, O. V. Bukunova. Transformation of the system of transcendental equations with application of the energy levels method..... 214

IN THE COURSE OF DISCUSSION

K. Yu. Losev. About construction bio-material influence on complex life safety of low-rise building objects..... 217

Abstracts..... 221
Submitting materials requirements..... 234
Subscription rules 235