Table of Contents

Preface and Scientific Committee

Chapter 1: Buildings and Structures

The Brickwork Joints Effect on the Thermotechnical Uniformity of the Exterior Walls from Gas-Concrete Blocks	
A.S. Gorshkov, N. Vatin, D. Nemova and D.S. Tarasova	3
Calculation Method of Justification of Technical Actions for Prevention of Ice Dams Formation on Buildings with a Pitched Roof N. Vatin, A.S. Gorshkov, D. Nemova, A. Urustimov, A.A. Staritcyna and P. Ryimkevich	9
Fire Resistance of Non-Crack Resistant Flexural Reinforced Concrete Elements V. Belov and V. Morozov	15
Heat and Mass Transfer in Low-Temperature Insulation in Moisture Conditions V. Polonnikov and A. Habibulin	21
Comparison of Different Types of Transparent Structures for High-Rise Buildings with a Fully Glazed Facade D. Nemova, E. Reich, S. Subbotina and F. Khayrutdinova	26
Prodrome in Experimental Investigation the Thermal Shielding Systems in Enclosure Structures	
N. Vatin, I. Togo, V. Bespalov, D. Kuzmenkov, G. Panteleev and D. Smirnitskiy	34
Improvement of the Double Skin Facades M. Petrichenko, N. Vatin and D. Nemova	41
Reduced Thermal Resistance of a Two-Layer Wall Construction A.S. Gorshkov and E. Ivanova	49
Unsteady Temperature Condition of the Enclosure Structure M. Petrichenko, D.S. Tarasova and D. Nemova	57
Unsteady Airway as an Effective Method of the Ice Melting Prevention on the Building's Roof	
A. Suslova, A. Sivokhin and M. Petrichenko	63
Humidity Conditions of Enclosing Structure with Silicate Brick Veneer and Variable Air Gap	
M. Petrichenko, D. Nemova, A. Bogomolova and A. Kopylova	71
Characteristic and Application of Facade System 'Polialpan' N. Vatin, D. Nemova, D. Marinenko and E. Talan	80
The Glass Ventilated Facades – Research of an Air Gap M. Petrichenko, A. Ostrovaia and E. Statsenko	87
The Results of Experimental Determination of Air Output and Velocity of Flow in Double Skin Facades	
M. Petrichenko, N. Vatin, D. Nemova and V. Olshevskiy	93
Improving Technology of Constructing Pre-Fabricated Buildings in the Conditions of Northern Regions	100
S. Sychev, G. Bad'in, Y. Kazakov and A. Judina Construction of Temporary Accommodation Camp and Selection of Optimal Type of	100
Building A. Birjukov and S. Bolotin	105
Analysis of the Masonry Structure Calculation with Vertical Ring Beams According to European Standards	
D. Zejak, N. Vatin and V. Murgul	111
Program- and Goal-Oriented Approach to Organization of Monitoring Deformations of Buildings and Structures V. Volkov and V. Smirnov	118
Constitutive Relationships of Concrete and Reinforcing Steel under High Temperatures	110
V. Fedorov and V. Levitskiy	124

Objective Estimation of the Use of Windproof and Weatherproof Membranes in Double Skin Facades	
I. Smirnov, E. Shesterova, D. Nemova and M. Petrichenko	130
Fire Safeguards of "Plastbau" Construction R. Kostić, N. Vatin and V. Murgul	138
The Research of the Effect of Basalt Wool on the Acoustic Isolation of the Floating Floor A. Fidrikova, O. Grishina, A. Marichev and A. Korsun	146
Performance Evaluation of High-Rise Complex Construction Depending on Building Site	
Placement I. Ptuhina, T. Spiridonova and T.A. Musorina	153
Using ANN in Process of Seismic Damage Prediction for Residential Buildings J. Dražić, I. Peško, V. Mučenski, M. Trivunić, D. Đorđević and N. Vatin	160
Experimental Testing of Retaining Walls of Precast Elements Z. Bonić, N. Davidović, V. Prolović, N. Romić and N. Vatin	168
Chapter 2: Foundations, Underground Structures	
Specific Features of Calculating Underground Structures Erected with Use of Freezing	
Method I. Sakharov and V. Paramonov	179
Calculation of Retaining Walls with Anchoring at Different Levels A. Melentev and V. Korovkin	185
The Comparison of Pile Load Capacity Based on the Results of Analytical Calculations and	
Static Tests A. Badanin, V. Melnikov and D. Filippova	190
Accuracy Appraisal of Pile Simulation by Elastic Linkage V. Lalin, S. Zimin, A. Trusova and P. Nachkina	195
Some Aspects of Maintaining Inclined Tunnel Escalators in St. Petersburg O. Bardyshev and V. Gordienko	202
Effectiveness of Soil Reinforcement Based on Complex Ash-Cement Bonder Y. Lazarev, M. Chakir, E. Sukhareva and Y. Ibraeva	208
Stress-Deformation State in the Rock Massif (Illustrated with the Example of Macedonia) Z. Zafirovski and N. Vatin	214
Improving Technological Processes for Borehole Drilling in Construction Using Vibration	
Impact V. Verstov and A. Judina	220
Chapter 3: Hydraulic Engineering Works	
Loads from Ice Ridge Keels – Analytical vs. Numerical A.M. Vakulenko and A.S. Bolshev	229
Coastal Ice Investigation on the Site of Further Bridge Construction - Sveagruva, Svalbard, Norway	225
A. Agafonov, D. Ksenofontova and K. Shkhinek Using of Ice for Constructing Islands in the Arctic Conditions	235
A. Karelov, K. Shkhinek and N. Belyaev	245
Problems Concerning Gravel Islands Constructing and Exploitation in the Arctic Conditions	251
V. Efimova, K. Shkhinek and N. Belyaev Comprehensive Settlement of the Gravitational Drilling Platform on the Seismic Action	251
L.B. Thien and V. Korovkin	257
Engineering Properties of Sea Ice Ridges in the Barents Sea in 2012-2014 Years for Evaluation of Ice Loads on Offshore Structures K. Gorbunova and K. Shkhinek	263
Ice Regime for Basins and Pumped-Storage Facilities	203
N. Bakanovichus and N. Vatin	270

Hydropower Potential Estimations and Small Hydropower Plants Siting: Analysis of World Experience	
N. Arefiev, N. Badenko, T. Ivanov, S. Kotlyar, O. Nikonova and V. Oleshko	285
Multicriterion Optimization of Power Sites Location on the Watercourse G.I. Sidorenko and A.S. Alimirzoev	293
Impact Wave on Port Mole in during Construction V. Sharova, I. Kantarzhi and T.L. Giang	299
Experimental Study of Tsunami-Type Waves Impact on Soil near Foundation of Offshore Gravitational-Type Platforms	
N.D. Belyaev, V.V. Lebedev, A.V. Mishina, I.S. Nudner, K.K. Semenov and D.I. Schemelinin	306
The Influence of Tectonic Faults on a Stress-Strain State of a Large Concrete Dam S. Le-Zakharov and B. Tseitlin	317
Geotechnical Researches for Proving the Design Decisions for Reconstruction of the Dam on the Creek Pevek	
O. Kotlov, P. Kondratenko and O. Sokolova	325
Characteristics of Bulk Carriers with Respect to the Developing Export Coal Terminals on the Far East of Russia	222
N. Kuptsov Ensuring the Reliability of Earth Dams in Complex Hydrogeological Conditions	333
G. Bulatov, N. Vatin, D. Nemova, Y. Ibraeva and P. Tarasevskii	342
Empirical-Statical-Dynamical (ESD) Methodology for Extrapolation of Rock Mass Properties for Construction of Tunnels	240
Z. Zafirovski and N. Vatin Enhanced Mualem-Van Genuchten Approach for Estimating Relative Soil Hydraulic	349
Conductivity V. Terleev, V. Badenko, I. Guseva and W. Mirschel	355
Two-Component Incompressible Fluid Model for Simulating the Cohesive Soil Erosion Y. Zakharov, A. Zimin, I. Nudner and V. Ragulin	361
Chapter 4: Building Materials and Products	
Local Data Flow Principles in Porosity of Materials B. Stamatovic and A. Korsun	371
Influence of Chemical Additives on Radiation Stability of Concrete - Theoretical Basis and Evaluation Method A. Pustovgar and V. Medvedev	377
Heat Insulation Materials Based on Cenospheres	311
D. Baidzhanov, Z. Nuguzhinov, V. Fedorchenko and L. Divak	383
Improving the Durability of Protective Materials Based on Inorganic Binders when Exposed to Short-Wave Radiation O. Makarevich and O. Smirnova	391
Application of Styrofoam in the Elements of Building Constructions	371
R. Kostić, V. Pukhkal, N. Vatin and V. Murgul	396
Destruction of Monuments' Materials by Organic Acids – Micromycetes Metabolites D. Shlychkova, S. Starsev and D. Vlasov	403
Testing of the Mechanical Properties of Masonry Walls – Determination of Compressive Strength	
Ž. Radovanović, R. Sinđić Grebović, S. Dimovska, N. Serdar, N. Vatin and V. Murgul	410
Effect of Air-Entraining Agent LHD on the Technological Properties of Concrete Mix	
Containing Superplasticizer S-3 Y. Barabanshchikov and M. Komarinskiy	419
An Impact of Carbon Nanostructured Additives on the Kinetics of Cement Hydration	
A. Frolov, A. Cherkashin, L. Akimov, N. Vatin, T. Koltsova, A. Nasibulin, O. Tolochko and L. Chumadova	425
Thermal Cracking Resistance in Massive Concrete Structures in the Winter Building	
Period K. Semenov and Y. Barabanshchikov	431

Comparison of European and Russian Technical Documentation for Structural Use of Concrete	
M. Antonova, D. Glushko, S. Belyaeva and L. Pakrastinsh	442
The Influence of Based on Polyalcohols Additive on the Cement Paste Shrinkage Y. Barabanshchikov, A. Arkharova and M. Ternovskii	448
Property Changes of Thermal Insulation Material due to the Effects of Environmental Conditions	
N. Vatin, I. Pestryakov and D. Avdeev	454
Influence of Plasticizing and Siliceous Additives on the Strength Characteristics of Concrete L. Akimov, N. Ilenko, R. Mizharev, A. Cherkashin, N. Vatin and L. Chumadova	461
The Influence of Precompression on Strength and Strain Properties of Concrete under the Effect of Elevated Temperatures V.I. Korsun and A. Korsun	469
Fiberglass Reinforcement for Concrete Y. Barabanshchikov, S. Belyaeva, A. Avdeeva and M. Perez	475
Fireproofing Cemented Fiber Vermiculite-Concrete Composites with Application Volcanic Ash	
V. Kretova, T. Khezhev, A. Zhukov and K. Hezhev	481
Effect of Modifying Admixtures on the Cement System Hydration Kinetics A. Adamtsevich and A. Pustovgar	487
Short-Time Creep of Concrete V. Kharlab and A. Maslennikov	493
Kinetics of Hydration and Hardening Processes in Clinkerless Slag-Alkaline Binder Materials	
T. Petrova and V. Prokofieva	499
Dependence of Relative Decreasing in Strength by Rate of Strain for the New Rapid Method for Determination of Concrete Frost Resistance	505
O. Pertseva and S. Nikolskiy	505
Development of the Nanomodified Filler for Asphalt Concrete Mixes M.A. Vysotskaya and S. Rusina	511
Optimization of Provide Compositions Bitumen Emulsions, for Example the Cationic	
Emulsifier M.A. Vysotskaya and A. Korotkov	517
Salt Corrosion of Masonry Mortar M. Zapoyev, S.A. Krivoy and S. Belyaeva	523
Influence of Cladding Material on the Vapor Permeability of Lightweight Expanded Clay Aggregate (LECA) Concrete	
J. Dunaevskaya, D. Zaborova, A. Churakov and A. Korsun	529
Use of Epoxy Fluoroplastic Coatings in Friction Pendulum Bearings A. Smelov, P.G. Ivanochkin and A. Tselykh	537
Influence of Synthetic Fibers Dispersed Reinforced Concrete Y. Barabanshchikov, A. Turkebayev, A. Dalabayev and D. Tleukhanov	543
Analysis of Behavior of a Lattice Girder According to Theory of Plasticity with Link	
Elements M. Ćosić, V. Varga, J. Stanković, M. Maneski and N. Vatin	559
Determination of the Critical Duration of the First Heating of Heavy Concrete by the Criterion of the Maximum Strength Reduction	
V.I. Korsun, A. Korsun and S. Mashtaler	566
Influence of High-Porous Filling Materials and Mineral Fiber on Thermal and Fire Resistant Properties of Aerated Composites Y. Pukharenko and Y. Tikhonov	572
Special Aspects of Hydration Process of Microfine Cement I. Ivanova, A. Pustovgar, A. Eremin and A. Adamtsevich	578
Novice Methodology in Preserving Prestressed Cables by Injection of a Special Gel B. Aranđelović, A. Veg and N. Vatin	584
Theory and Practice of Functioning Machines for Vibratory Agitation V. Kuzmichev and A. Lyalinov	590
Construction of Road Embankment with Waste Materials	
M. Šešlija, N. Radović and N. Vatin	596

Chapter 5: Applied Mechanics in Material Science, Static and Dynamic Loads of Structures and Facilities

Application of Continuum Damage Mechanics Approach for the Strength Analysis of Reinforced Concrete Constructions A. Benin	605
Application of Stepped Isothermal Method for Prediction the Creep Behavior of Extruded Polypropylene Geogrid	
V. Grebneva, K. Utkina, M. Sabri and O. Stolyarov	611
Design of Lightweight Glass-Fibre-Reinforced Epoxy I-Beam for Structural Applications N. Afanasev, P. Martynov and O. Stolyarov	617
Modeling of Concrete Behavior under Compression D.A. Kitaeva, Y.I. Rudaev, B.S. Ordobaev and S.S. Abdykeeva	623
Geometrically Nonlinear Rods Theory - Comparison of the Results Obtained by Cosserat- Timoshenko and Kirchhoff's Rod Theories M. Beliaev, V. Lalin and V. Kuroedov	629
The Effect of Weathering and Biological Exposure on the Tensile Properties of Nonwoven Geotextile	(2)
J. Bykova, E. Dzonik and O. Stolyarov Development and Investigation of Mechanical Properties of Glass Fiber Reinforced	636
Concrete M. Beliaev, S. Semenov and O. Stolyarov	642
Finite Element Modeling of Steel Pipeline Reconstruction Using Fiberglass Composite Material	-
E.A. Nekliudova, A.S. Semenov, S.G. Semenov and B.E. Melnikov	648
Two-Dimensional Surface Fatigue Crack Propagation and its Finite Element Simulation R. Guchinsky and S. Petinov	654
Simulation and Experimental Investigation of Deformation and Fracture of the Masonry A.I. Grishchenko, A.S. Semenov, S.G. Semenov, A.V. Benin and B.E. Melnikov	661
Bending of Laminated Composite Plates M. Rakočević and N. Vatin	667
A Posteriori Error Control at Numerical Solution of Plate Bending Problem V.G. Korneev	674
Modeling Nonlinear Deformation and Destruction Masonry under Biaxial Stresses Part 1 – Masonry as Simulation Object O. Kabantsev	681
Local Buckling of Cold-Formed Steel Members with Edge Stiffened Holes M. Garifullin, D. Trubina and N. Vatin	697
Strength Evaluation of a Linear Extended Structure on a Statically Inhomogeneous	
Foundation L. Muravieva and N. Vatin	703
Advanced Method for Semi-Rigid Joints Design N. Vatin, R. Bagautdinov and K. Andreev	710
Prestressed Cladding Elements for Tensioned Structures D. Serdjuks, K. Rocens, L. Pakrastinsh, N. Vatin and V. Goremikins	716
Reticular-Stretched Thermo-Profile: Buckling of the Perforated Web as a Single Plate N. Vatin, J. Havula, L. Martikainen, A.S. Sinelnikov and L.L. Shurovkina	722
Optimization Models of Heat Treatment Process of Masonry in the Winter due to a Stationary Heating System Constructed Buildings Oil Production Complex E. Sultanova, I. Fedortsev and V. Filippov	728
Calculation of Combined Structure and Installation Roof Systems Taking into Account Structural Nonlinearity Factor	724
V. Egorov and G. Belyy Crack Resistance Criteria for Reinforced Concrete Beams with Corrosion Damage in	734
Strength Resource Assessment V Kolchunov N Androsova and T Kolchina	740

Mathematical Analogy between Non-Uniform Torsion and Transverse Bending of Thin- Walled Open Section Beams	
V. Rybakov and A. Sergey	746
Comparison of the Bearing Capacity of LST- Profile Depending on the Thickness of its Elements D. Trubina, D. Abdulaev, E. Pichugin, V. Rybakov, M. Garifullin and O. Sokolova	752
Strength and Stability of Arched Frame Structures Made of Brittle Material A. Aznabaev, S. Bondarenko, K. Gureev, D. Likhaia, I. Loginova, N. Lopatin, O. Stolyarov and	132
E. Yakovleva	758
Friction of Rubber on the Concrete Surface Treated with a Remedy against Drying out Y. Barabanshchikov, L. Pakrastinsh, V. Gatitullin and A. Muhanna	768
The Typical Roof Structure Project Based on Trusses Made of Roll-Welded RHS Pipes Development M. Baranovskiy, V. Tarasov and S. Zimin	774
The Computational Model of Spatial Formation of Cracks in Reinforced Concrete Constructions in Torsion with Bending A. Salnikov, V. Kolchunov and I. Yakovenko	784
Probable Errors of Dynamic Method at Conservative System Stability Analysis I. Rutman and V. Ulitin	790
Justification of Using Delta-Functions in the Theory of Shells Featuring Irregularities V. Karpov and L. Kondratyeva	796
Calculation on Formation of Longitudinal Cracks in Reinforced Concrete Structures Taking into Account Nonlinearity of Concrete Straining A. Veselov and Y. Pukharenko	802
Modeling Nonlinear Deformation and Destruction Masonry under Biaxial Stresses Part 2 - Strength Criteria and Numerical Experiment O. Kabantsev	808
Quadrilateral Finite Element for Analysis of Reinforced Concrete Floor Slabs and Foundation Plates	020
S. Fialko The Optimal Control of the Elastic Stress State Using Boundary Loads	820
V. Lalin, A. Savchenko, S. Dyakov and I. Lalina	836
The Analysis of Convergence of Finite Element Method for a Foundation Slab on the Bilinear Subgrade V. Maskaleva and V. Rybakov	842
New Numerical Methods for Structural Mechanics Problems in Unbounded Domains N. Chernukha	848
Correct Formulation of the Stability Problem for Timoshenko Beam V. Lalin and D. Kushova	854
The Initial Boundary-Value Problem for a Mathematical Model for Granular Medium V. Lalin and E. Zdanchuk	863
Elasto-Plastic Stability Analysis of the Frame Structures Using the Tangent Modulus Approach S. Corić, S. Brčić and N. Vatin	869
The Algorithm of Solving the Problem of Large Elastic-Plastic Deformation by FEM	809
L. Sultanov and R. Davydov	875
Deterministic and Probabilistic Approach of Capacity of the Elements of a Lattice Gird M. Cosić, M. Krstić, S. Filipović, I. Milojević and N. Vatin	881
Multimodal Pushover Analysis for R.C. Bridges P. Crespi, A. Franchi and N. Giordano	888
Complex Testing and Rehabilitation Measures of the Bridges (Example of Road Bridge Across the South Morava, Serbia)	906
A. Savić, N. Vatin and V. Murgul Preparation, Installation and Signal Processing of Strain Gauges in Bridge Load Testing R. Kamnik, B. Kovačič, A. Štrukelj, N. Vatin and V. Murgul	896 903
Geodetic Measurement of Vertical Displacements (Illustrated with the Slovenian Viaduct) B. Kovačič, R. Kamnik and N. Vatin	913
On Strength Reserve Assessment for Prismatic Folded Plate Roof Structures V. Kolchunov, E. Osovskih and P. Afonin	922

Finite Element Modeling of Porous Material Structure Represented by a Uniform Cubic	
Mesh A. Levandovskiy and B. Melnikov	928
Finite-Element Simulation of Progressive Cross-Section Ellipticity of Single Crystal Samples under Uniaxial Tension M. Beliaev and A.S. Semenov	937
Experimental Investigation and Finite Element Simulation of Fracture Process of Polymer Composite Material with Short Carbon Fibers I. Maniak, B. Melnikov, A.S. Semenov and S. Saikin	943
Fracture Analysis of Piezoceramic CT-Specimen for Different Types of Crack Face Boundary Conditions I.V. Ivashov and A.S. Semenov	943
Thermal-Fatigue Analysis of Turbine Discs under Complex Thermo-Mechanical Loading with Account of Plasticity and Creep Effects I. Ignatovich, A.S. Semenov, S. Semenov and L. Getsov	949
Comparison of Rate-Dependent Ferroelectroelastic Phenomenological Models for Prediction of PZT Creep A.S. Semenov and S. Lobanov	
Analysis of Track Gauge Widening in Curves with Small Radius Z. Popović, L. Lazerević and N. Vatin	961 967
Chapter 6: Organization and Planning of Construction Works	
Possibilities of Implementing Customer Relationship Management in the Function of Improving the Competitiveness of the Civil Engineering Sector	
B. Melovic, M. Jocovic, I. Lugovskaya and N. Vatin	977
Recourse Optimization of Construction on a Basis of the Frontal and Rhythmical Stream T. Simankina and O. Sergeenkova	984
Renewal Methods of Construction Machinery According to Technical and Economic Indicators S. Repin and S. Evtjukov	990
"Knowledge-Based Economics" in the Innovative Development of the Construction Sphere G. Tokunova and A. Petrov	996
New Paradigm of Integrated Housing Development in the Metropolitan Area (Based on the Example of St. Petersburg) S. Ershova and E. Smirnov	1002
Time is the most Important Resource for Increasing Construction Efficiency Y. Panibratov and A. Larionov Larieties of a Parities Commence Specific and Matheda of Larieties Section Management	1007
Logistics of a Building Company: Specifics and Methods of Logistics System Management N. Pletneva and V. Koshcheyev	1013
Quasi Float Time Revealing when Evaluating Construction Schedules Based on Discounting S. Bolotin, M. Kotovskaya, I. Ptuhin, I. Ptuhina, I. Chahkiyev and J. Ćetković	1019
Method "Earned Value Management" for Timescale Controlling in Construction Projects S. Bovteev and M. Petrochenko	1025
Estimation of Economic Efficiency in Selection of Mast Hoist Equipment, Based on Technical Characteristics R. Alzhanova, K. Romanov, A. Akhatuly and P. Grigorev	1031
Scheduling of Cottage Settlement Building B. Junussov and T. Morozova	1038
Residential Stock Management Based on Input-Output Balance Model E. Guzhva and I. Drozdova	1049
Chapter 7: Architecture and Urban Planning	
Clustering of City Housing Facilities Based on Self-Organizing Maps T. Simankina and O. Popova	1057

Spatial and Technological Design Principles of Mountain Resort Hotels G. Radovic	1063
Revitalization as the Principle of Architectural Heritage Protection – Case Study of Serbia and Russia	1002
M. Penić, V. Murgul and N. Vatin	1072
Azerbaijan Hamam, the History and Restoration Specifics V. Goryunov, M. Namazov, V. Murgul and N. Vatin	1079
William Richard Lethaby – Architecture, Mysticism and Myth V. Goryunov, T. Konjkova, V. Murgul and N. Vatin	1084
Investigation of Natural Hazards: Theoretical and Practical Models M. Kreiniuk and N. Belyaev	1090
Architectural Renovation of Quarter in Mannheim, Germany M. Petrichenko, X.M. Rakova, M. Vyatkin, T.A. Musorina and D. Kuznetsova	1101
Formation of the Architecture of Developing Business Centers in Special Economic Zones with the Use of the Bio-Similar Modeling Principle O.L. Bantserova and A. Kosta	1107
Landscape Urbanism of Riverside Territories: Humanization Strategy V. Nefedov and M. Stiglitz	1114
Orientational Reaction as a Way of Adjusting to Space E. Alihodzic Jasarovic, R. Alihodzic, V. Murgul and N. Vatin	1120
Efficiency of Implementation of Spatial Development Strategies on the Case of Business	
Zones in Slovenia A. Fikfak and G. Čok	1128
Decentralization as a Cause of Spatial Segregation E. Alihodzic Jasarovic, D. Komatina, S. Paunovic Zaric, V. Murgul and N. Vatin	1134
Houses New Live Build from 50s till 60s in Saint-Petersburg V. Ryabykh, I. Grushko and A. Gorbovskaya	1141
Daylight Factor Analysis for Different Types of Static Shading Devices: Case Study Location in Podgorica D. Komatina, S. Paunovic Zaric, E. Alihodzic Jasarovic, V. Murgul and N. Vatin	1150
Redevelopment Project of Shuvalovsky Park S. Makarevich, S. Pavlov and V. Terleev	1158
Reconstruction of Apartment in the Meltzer's Apartment House S. Vasiutina and N. Vatin	1165
Architectural Tectonics as a "Living Pattern" of Building Structures S. Zavarichin and W. Temnov	1171
Renovation of Multi-Apartment Building in Latvia A. Borodinecs, J. Zemitis, A. Zajacs and J. Nazarova	1177
Reconstruction of Courtyards in Historical Buildings of Saint-Petersburg – Ways to Improve Quality of Interior Space	
V. Murgul	1182
Evolution of Application of Neogothic Forms in the Russian Architecture of the XVIII-XIX Centuries L. Varrachanav, V. Margarland N. Vatin	1102
I. Yamshanov, V. Murgul and N. Vatin The Systematical Mass of Observation to Posidential Mass.	1192
The Sustainable Strategy of Obsolete Building Conversion to Residential Uses M. Živković, M. Tanić, S. Kondić, V. Nikolić, N. Vatin and V. Murgul Ostivićing Transport Lagistic Cleaner English Florence for Boot Magazita and the Basis of	1199
Optimizing Transport-Logistic Cluster Freight Flows of a Port Megacity on the Basis of GIS J. Kotikov and P. Kravchenko	1206
Driver's Reaction Time in Evaluation of the Road Capacity	1200
A. Shevtsova, I. Novikov and A. Borovskoy	1212
Origin-Destination Matrix as a Way to Create a Basic Algorithm for Simulation a Load of Transport Network A. Shevtsova, M. Yablonovskaya and A. Borovskoy	1218
About the Dynamic Model Formation of the Urban Livelihood System Compatible with the	1210
Biosphere V. Ilyichev, V. Kolchunov, S. Emelyanov and N.V. Bakaeva	1224

Reforms of St. Petersburg Municipal Services Regulatory Bodies in the First Half of XIX Century	
M. Zolotareva	1231
GrimShaw Proposal for Tirana River Shore Regeneration: Survival of the Waterfront F. Nepravishta, A. Maliqari and A. Cuedari	1237
Analysis of Compatibility of Contemporary Residential Housing in Nis with Current Standards in the Republic of Serbia	
S. Kondić, M. Živković, M. Tanić, A. Keković, M. Petrović and N. Vatin	1244
Chapter 8: Air, Gas and Water Research in Area of Civil Engineering	
Assessment of Certainty of Ventilation Processes Mathematical Modeling T. Daciuk and V. Ulyasheva	1255
Modern Principles of Air Exchange Concept in Premises of Different Purpose G. Pozin and A. Grimitlin	1261
Selection of Hot Water Supply Metering Devices for Residential Buildings V. Pukhkal and B. Jurmanov	1267
Feasibility Study of the Absorption Chiller Integration S. Kolbaya, T. Simankina and V. Albrekht	1273
Comparison of Air Conditioning Systems for Advanced Data Centers O. Aver'yanova, V. Voronkova, V. Demchenko, N. Kudaibergenova and A. Solobay	1279
Economic Efficiency of Automated Individual Heating Substation (IHS) N. Mironov and D. Petrosova	1285
Numerical Flows Recovery Analysis for Trunkline Failures V. Seleznev, A. Komissarov and S. Pryalov	1292
The Air Consumption Estimation of Convection Heaters with Natural Convection and Water Heat Carrier V. Pukhkal	1301
Modeling of Natural Gas Transportation and Distribution in Low Pressure Gas Pipelines O. Gnezdilova, G. Shedrina and V. Amelin	1307
Characteristic Property of Adsorption Cleaning of Recirculated Air for Heat Chambers for Electric Testing of Electronic Devices N. Kobelev, T. Polivanova, A. Akul'shin, V. Kretova and V. Kobelev	1313
Inspecting and Monitoring the Technical Condition of Sewage Collectors V. Vasilyev and Y. Stolbikhin	1319
One-Sludge Denitri-Nitrification System Application in Reconstruction of Biological Treatment Stations in Russian Federation	
E. Gogina and O. Ruzhitskaya Innovative Environment Friendly Refurbishment Technologies for Water Supply and	1325
Sewage Systems of Sugar Factories T. Polivanova, S. Polivanova, N. Kobelev, A. Akul'shin and V. Kobelev	1332
Water Quality Improvement by Additional Filtering through Sorption Loading Modified by Fullerenes A. Kim and N. Chernikov	1338
Designing Filtraring Equipment Forwater Wells of the Municipal Water Intakes in the City of Kursk	
A. Akulshin, N. Kobelev, T. Polivanova, V. Kretova and V. Kobelev Determination of Wastewater Purification Index under Joint Action of Several Pollution	1344
Sources in Marine Water Areas S. Bezborodov and N. Zemlynaya	1350
Experimental Modeling and Electrochemical Analysis of Salted Oily Wastewaters E. Simonenko, V. Starkov, L. Molodkina and A.N. Chusov	1357
Energy Performance of Particle Settling in Cyclones K. Strelets, M. Petrochenko and A. Girgidov	1363

Chapter 9: Energy Efficiency, Green Buildings and Sustainable Development

Thermal Comfort and Energy Performance Assessment for Residential Building in Temperate Continental Climate S. Korniyenko	1375
The Influence of the Thermal-Insulating Properties of External Enclosure Structures on the Energy and Opportunity Costs	1373
N. Vatin, D.S. Tarasova and D. Nemova	1381
Energy-Efficient Multi-Comfort Group of Buildings in Svetlorechenskiy Estate R. Perminov, I. Maltseva, N. Kaganovich and A. Yolohov	1389
Increase the Energy Efficiency of the Multi-Story Apartment Building N. Vatin, D. Nemova, Y. Ibraeva and P. Tarasevskii	1395
The Increase of the Thermal Shielding Level for a Residence Building of 1-528 KP Series N. Vatin, D. Nemova, A. Kazimirova and K. Gureev	1402
Development of Energy-Saving Measures for the Multi-Story Apartment Buildings N. Vatin, D. Nemova, Y. Ibraeva and P. Tarasevskii	1408
Study of Operation of Power-Generating Devices of Gaseous Fuels Combustion A.A. Sinitsyn	1417
New Industrial Energy and Resource Saving Structural Solutions for Public Buildings N. Klueva, S. Emelyanov, V. Kolchunov and A. Bukhtiyarova	1423
Renewable Sources in Passive SIP-House A. Bekbayev, Y. Khidolda, A. Zveryev, L. Skendirova and A. Kassymbekova	1430
Rating Energy Efficiency and Sustainability of Buildings by International Standards N. Vatin, D. Nemova, D. Nabiullina and A. Ovdienko	1434
Results of Multi Comfort Building Designing E. Bazhenova, J. Bykova, D. Bryus and D. Tseytin	1445
Increasing the Wind Turbine Power Using Aerodynamics Shape of the Building S.A. Krivoy, N.S. Bolshakov and X.M. Rakova	1456
Energy Efficient Solutions of Power Supply in North Regions V. Elistratov, I. Kudryasheva and P. Pilipets	1463
Sustainable City Development: Implementation Practices in Riga A. Zajacs, J. Zemitis, A. Prozuments, K. Tihomirova and A. Borodinecs	1470
Thermal Insulation Features of Residential Historical Buildings in the Case of Saint-	
Petersburg V. Murgul, V. Pukhkal and N. Vatin	1477
Energy Efficiency of Single-Family Houses in Serbia and Montenegro: Strategy for Upgrading the Performance of Existing Stock S. Kosanović, D. Komatina, R. Nikčević, V. Murgul and N. Vatin	1.40.6
The Role of the State and Citizens to Improve Energy Efficiency	1486
O. Gamayunova and N. Vatin	1493
Estimation of Industrial Wastewaters Treatment Efficiency by Biotesting M. Andrianova, E. Bondarenko and A.N. Chusov	1499
Energy-Efficient Modernization of the Nobel's Mansion in Saint Petersburg: Solar Energy Supply Potential	
E. Aronova, Ž. Radovanović, V. Murgul, N. Vatin and M. Shvarts	1505
Energy-Plus House for the Climatic Conditions of Macedonia M. Cvetkovska, V. Murgul, E. Aronova, N. Vatin and M. Shvarts	1512
Impact of Thermal Insulation and Type of Windows on Energy Demand of Buildings with Passive House Standard	
M. Knezevic, M. Cvetkovska, S. Trpevski, A. Andreev, A. Trombeva Gavriloska and M. Lazarevska	1519
Climate Changes in the Light of Relation between Highly Developed Countries and the Rest	
of the World D. Komatina, S. Paunovic Zaric, E. Alihodzic Jasarovic, S. Kosanović, V. Murgul and N. Vatin	1530
Definition of Climatic Parameters for Calculation of Energy Performance of Buildings R. Sinđić Grebović, T. Spiridonova and M. Vrublevskaya	1537

Structural Design of Energy Efficient Buildings Using Multi-Objective BB-BC Algorithm A. Milajić, D. Beljaković, N. Čulić, N. Vatin and V. Murgul	1544
Passive Solar Heating: Its Role in Architectural Shaping V. Murgul, D. Komatina, V. Nikolić and N. Vatin	1552
The Study of Humidity Conditions of the Outer Walls of a "Passive House" for the Climatic Conditions of Serbia, City Nis	
V. Pukhkal, V. Murgul, S. Kondić, M. Živković, M. Tanić and N. Vatin	1557
Nearly Zero-Energy Buildings: Optimal Cost of Minimum Energy Requirements R. Sinđić Grebović and Y. Zolotova	1564
Heat Balance Method Application in Building Energy Performance Simulation N. Harmati, Ž. Jakšić and N. Vatin	1572
The Architectural Concept of the Building with Low Energy Consumption E. Perlova, S. Karpova, X.M. Rakova, E. Bondarenko, M. Platonova and A.S. Gorshkov	1580
Analysis of Micro CHP Potential in Latvia M. Krizmane and A. Borodinecs	1589
Laboratory Experiments on the Measurement of the Greenhouse Gases Concentration at the Water-Air Interface by Using a Floating Gas Box Method S. Potapov, I. Potapov, M. Meshalkina and D.V. Molodtsov	1596
Model Calculation of Energy Carriers Expenses on the Basis of Biogas in System Reformer	
- Fuel Cell for Autonomous Power Supply Systems V.V. Zhazhkov, M.Y. Zubkova, V.I. Maslikov, D.V. Molodtsov, A.N. Chusov and D. Semenenko	1602
Chapter 10: Education and Training in Area of Civil Engineering	
Distance Learning System Moodle for Training of Specialists in the Field of Civil Engineering	
O. Gamayunova, N. Vatin, A. Rechinsky and E. Razinkina	1611
Autodesk Revit - Key to Successful Training of Highly Qualified Civil Engineers J. Zolotova, N. Vatin, E. Tuchkevich and A. Rechinsky	1617
The Benefits of Authorized Training Center Autodesk for Higher Education Institutions E. Tuchkevich, A. Rechinsky, N. Vatin, J. Zolotova and V. Tuchkevich	1626
An Update Procedure of Basic Education Programmes in St. Petersburg Polytechnic University	
L. Chernenkaya, O. Krolenko, M. Petrochenko and K. Strelets	1634
Results of the Admission Campaign: Which is the Future Specialist in the Field of Civil	
Engineering? O. Gamayunova and N. Vatin	1640
The Role of the Future Civil Engineers' Motivation in the Foreign Language Learning	
M. Kukushkina	1646