

Table of Contents

Preface

Chapter 1: Modern Materials in Construction

Observation of Cracks Originating from Transition Area in Induction-Heated S45C Shaft under Rotating Bending Fatigue K. Mizobe, M. Matsushita, T. Shibukawa and K. Kida	3
Determination of Time Dependent Diffusion Coefficient Aging Factor of HPC Mixtures Q. Tran, P. Ghosh, P. Lehner and P. Konečný	11
Shaping Properties of Self Compacting Concrete by Different Steel Fibre T. Ponikiewski and J. Katzer	21
Experimental Research on the Properties of Secondary Raw Materials Resulting from the Recycling of Tyres M. Jašek, B. Hrubá, F. Khestl, P. Kurečka and J. Teslík	29

Chapter 2: Experimental Research and Numerical Modeling of Structures and Structure Elements

Numerical Modelling and Laboratory Testing of Selected Bolt Connections of Steel Structures A. Jurčíková and M. Rosmanit	41
Experimental Measurement, Modeling and Calculation of Volume Changes of Cement Concrete M. Kropáček and R. Čajka	51
Experimental Verification of the Stiffness of a Semi-Rigid Timber Connection J. Sandanus, K. Sógel, T. Klas and M. Botló	63
Pre-Tension Losses in Cable Bolts and their Progress in Time P. Dvorak	73
Numerical Solution of Prestressed Foundation - Subsoil Interaction Using FEM R. Čajka and J. Navrátil	81
Transverse and Longitudinal Harmonic Wave in Layered Structure Made of Hyperelastic Materials M. Major, J. Niemiro, I. Major and J. Brozovsky	89
Numerical Modelling of Idealized Masonry Samples in 2D with Use of Tensor Scale J. Brozovsky and J. Koktan	99
The Applicability of Probabilistic Calculation Methods in Building Thermal Technology and Energetics N. Zdrazilova, D. Valachova and I. Skotnicova	109

Chapter 3: Impact of Environmental Conditions on Materials and Structures

Analysis of Biological Damage of the Timber Footbridge R. Fojtík and V. Vašková	125
Corrosive Environment Factors and their Influence on the Development of Weathering Steel Corrosion Products M. Kubzová, V. Křivý, V. Urban and K. Kreislova	137
The Effect of the Variation of Input Parameters on the Onset of Corrosion of the Bridge Deck Exposed to Chlorides Considering Selected Reinforcement Protection P. Konečný and P. Lehner	147