

# Proceedings of the Conference on the Rehabilitation and Reconstruction of Buildings CRRB 2012

Selected, peer reviewed papers from the Conference on the Rehabilitation and Reconstruction of Buildings 2012 (CRRB 2012), November 6-7, 2012, Brno, Czech Republic

von  
Rostislav Drochytka, Jan Vanerek

1. Auflage

Proceedings of the Conference on the Rehabilitation and Reconstruction of Buildings CRRB 2012 – Drochytka /

Vanerek  
schnell und portofrei erhältlich bei [beck-shop.de](http://beck-shop.de) DIE FACHBUCHHANDLUNG

Thematische Gliederung:

Architektur: Restaurierung, Instandhaltung

Trans Tech Publications 2013

Verlag C.H. Beck im Internet:

[www.beck.de](http://www.beck.de)

ISBN 978 3 03785 679 6

# Table of Contents

## Preface and Committees

## Chapter 1: Timber Protection

### Protection of Timber from Combustion and Burning Using Alkaline Aluminosilicate-Based Coatings

P. Krivenko, S. Guzii and A. Kravchenko 3

### Reconstruction of a Baroque Open Beam Ceiling Based on Material Analysis

M. Kloiber, J. Válek, J. Bláha and J. Čechová 10

### Non-Destructive and Minimal-Invasive Status Determination and Heritage Friendly Remediation of the Wooden Structures of Bothmer Castle

G. Haroske, U. Diederichs and V. Petránek 20

### Efficiency of Liquidation of Biotic Pests Using Microwave Radiation

M. Novotný, J. Škramlík, K. Šuhajda, J. Sobotka, J. Gintar and T. Kalábová 27

### The Evaluation of Modifications to Glued Joints Utilizing Epoxy-Based Adhesive for Structural Timber Bonding

J. Vaněrek, A. Benešová, J. Ráhel' and P. S'ahel 37

## Chapter 2: Surface Treatments

### Investigation of the Causes of Colour Inconsistency in the Facades of Vrchotovy Janovice Castle

A. Dufka, P. Rovnaníková and R. Drochytka 45

### Advanced, Thermal Insulation Materials Suitable for Insulation and Repair of Buildings

J. Hroudová, J. Zach, R. Hela and A. Korjenic 54

### Hydrophobized Lime Plasters as Protective Surface in Wet Rooms in Monument Preservation

B. Wolff 60

## Chapter 3: Rehabilitation of Masonry

### Impact of the Chemical Injection Method on the Dispersion of the Injected Agents in Masonry

S. Nenádálova, L. Balík, J. Kolísko and T. Klečka 73

### Several Comments on the Broumov Group of Churches Using Experiences with Water Table Variation on other Historical Sites

P. Kuklík and J. Záleský 79

### Efficiency Analysis of Materials Used for Mechanical Methods for Damp Masonry Rehabilitation

L. Mizerová and R. Smolka 87

### Role of the Geologists in the Process of Monuments Ashlar Masonry Repair

K. Kovářová, J. Schröfel and S. Chamra 93

### Survey of the Part of Medieval Fortification System of Prague Lesser Town

E. Burgetová and K. Fořtová 100

## Chapter 4: Maintenance of Concrete Structures

### Rehabilitation of Concrete Surfaces of Hydropower Engineering Structures Deteriorated by Soft Corrosion and Cavitation

S. Guzii, R. Hela and V. Kirichok 107

### Concrete Structures Restoration from the Fire Safety Point of View

I. Bradáčová and P. Kučera 113

## Chapter 5: Physicochemical Bases of Building Materials

|                                                                                                                                                                               |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Physical and Chemical Properties of Adhesives Based on Geocement for Restoration and Rehabilitation of Building Materials</b>                                              |     |
| G. Vozniuk, E. Kavalerova, P. Krivenko and O. Petropavlovskii                                                                                                                 | 123 |
| <b>Investigations on Properties Determining Durability of Novel PCC</b>                                                                                                       |     |
| W. Malorny and M. Plath                                                                                                                                                       | 130 |
| <b>Study of Alternative Raw Materials Parameters for Modification of Cement-Bonded Particleboards Composition</b>                                                             |     |
| T. Melichar, J. Bydžovský and Š. Keprdová                                                                                                                                     | 139 |
| <b>Lightweight Artificial Aggregate Based on Fly Ash for New Rehabilitation Materials</b>                                                                                     |     |
| P. Sokol, R. Drochytka, V. Černý and E. Venhodová                                                                                                                             | 146 |
| <b>Development of Materials Based on Flax for Thermal Insulation and Thermal Rehabilitation of Structures</b>                                                                 |     |
| J. Zach, J. Hroudová and N. Žižková                                                                                                                                           | 153 |
| <b>Polymer-Modified Cement Composites with Increased Resistance to Elevated Temperatures</b>                                                                                  |     |
| J. Bydžovský, Á. Dufka and T. Melichar                                                                                                                                        | 158 |
| <b>The Influence of the Addition of Secondary Materials to the Thermal-Technical Properties of Filling Materials</b>                                                          |     |
| Š. Keprdová, J. Bydžovský and K. Křížová                                                                                                                                      | 165 |
| <b>Development of Flooring Materials with Cellular Waste</b>                                                                                                                  |     |
| E. Tůmová and R. Drochytka                                                                                                                                                    | 172 |
| <b>Amelioration of the Porosity in Silicate Based Materials</b>                                                                                                               |     |
| L. Mészárosová and R. Drochytka                                                                                                                                               | 176 |
| <b>3D Data for Calculation of Capillary Conductivity Coefficient</b>                                                                                                          |     |
| J. Škramlík, M. Novotný, O. Fuciman and K. Šuhajda                                                                                                                            | 180 |
| <b>Long Term Behaviour of Portland Limestone Cement Concrete Exposed to Combined Chloride and Sulfate Environment. The Effect of Limestone Content and Mineral Admixtures</b> |     |
| K. Sotiriadis, S. Tsivilis, J. Kosíková and V. Petránek                                                                                                                       | 185 |
| <b>Physico-Mechanical Properties of the Threshold Coupling Made of Secondary Raw Materials for Use in the Rehabilitation and Reconstruction of Buildings</b>                  |     |
| R. Smolka, L. Kalousek and L. Mizerová                                                                                                                                        | 193 |

## Chapter 6: Statics and Dynamics of Buildings

|                                                                                                                 |     |
|-----------------------------------------------------------------------------------------------------------------|-----|
| <b>Modeling of Historical Timber Roof Truss of Želiv Monastery</b>                                              |     |
| P. Mec, J. Daňková and T. Murínová                                                                              | 201 |
| <b>Utilization of Splice Skew Joint with Key on Reconstruction of Historical Trusses</b>                        |     |
| K. Šobra and P. Fajman                                                                                          | 207 |
| <b>Optimal Design of NPP Containment Protection Against Fuel Container Drop</b>                                 |     |
| J. Králík                                                                                                       | 213 |
| <b>Application of Different Rehabilitation and Strengthening Methods for Insufficient RC Beam-Column Joints</b> |     |
| Ö. Yurdakul, Ö. Avşar and K. Kiliç                                                                              | 222 |
| <b>Strengthening of Masonry Walls with GFRP Straps – Testing and Application</b>                                |     |
| J. Galic, T. Kisiček and M. Galic                                                                               | 230 |