

2nd International Conference on Rehabilitation and Maintenance in Civil Engineering

(ICRMCE 2012)

Procedia Engineering Volume 54

**Solo, Jawa Tengah, Indonesia
8-10 March 2012**

**ISBN: 978-1-62748-635-4
ISSN: 1877-7058**

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© by Elsevier B.V.
All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact Elsevier B.V.
at the address below.

Elsevier B.V.
Radarweg 29
Amsterdam 1043 NX
The Netherlands

Phone: +31 20 485 3911
Fax: +31 20 485 2457

<http://www.elsevierpublishingsolutions.com/contact.asp>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

| | |
|---|------------|
| Innovative Rehabilitation and Maintenance for Sustainable Construction..... | 1 |
| <i>Sholihin As'ad</i> | |
| Use of FRP in Egypt, Research Overview and Applications | 2 |
| <i>Mohamed A. Mohamedien, Abdel-Hady Hosny, Amr Abdelrahman</i> | |
| Innovative Solutions for the Construction and the Repair of Hydraulic Structures..... | 22 |
| <i>Harald S. Müller, Edgar Bohner, Michael Vogel, Vladislav Kvitsel, S. Solichin</i> | |
| Addressing Infrastructure Durability and Sustainability by Self Healing Mechanisms - Recent Advances in Self Healing Concrete and Asphalt | 39 |
| <i>Erik Schlangen, Senot Sangadji</i> | |
| Development of Underground Water Extraction System for Karst Regions with Adapted Technologies and Operating System – Pilot Plant in Java, Indonesia | 58 |
| <i>Franz Nestmann, Peter Oberle, Muhammad Ikhwan, Daniel Stoffel, S. Solichin</i> | |
| Durable and Sustainable Road Constructions for Developing Countries | 69 |
| <i>A.A.A. Molenaar</i> | |
| Performance Criteria to Assess Shrinkage Cracking Tendency in Concrete Overlay..... | 82 |
| <i>S.A. Kristiawan</i> | |
| Some Common Maintenance Problems and Building Defects: Our Experiences | 101 |
| <i>Ahmad Suffian</i> | |
| A Case Study on Corrosion in Concrete Floating Docks in Qeshm Port | 109 |
| <i>Mohammad Hasan Ramesht, Mohammad Ali Mehdizadeh Tavasani</i> | |
| Assessment of Concrete Quality in Libya | 117 |
| <i>Mohamed S. Alazhari, Milad M. Al Shebani</i> | |
| Reconstruction and Retrofitting of Buildings after Recent Earthquakes in Iran..... | 127 |
| <i>T. Mahdi, A. Mahdi</i> | |
| Liquefaction Due to September 30th 2009 Earthquake in Padang..... | 140 |
| <i>A. Hakam, E. Suhelmidawati</i> | |
| Status of Caramoan Peninsula Road: Why People Preferred Traveling by Sea Rather than Passing in such Highway? | 147 |
| <i>Raymundo V. Romero</i> | |
| Lesson Learned from 27th May 2006 Yogyakarta Earthquake - Case of Building with Long Span of Roof Structure..... | 158 |
| <i>Ade Lisantono, Yoyong Arfiadi</i> | |
| Investigation on Wall Crack Damage and Its Proposed Repair Method | 165 |
| <i>Sholihin As'ad, M. Mukahar, M. Sukiman</i> | |
| Finite Element Analysis of the Movement of the Tie-Back Wall in Alluvial-Silty Soils..... | 176 |
| <i>Agus Setyo Muntohar, Hung-Jiun Liao</i> | |
| Seismic Analytical Model for Retrofitted Old Reinforced Concrete Structures | 188 |
| <i>M. Zeinoddini, A. Dabiri</i> | |
| Seismic Assessment of a Full-Scale Double-Storey Residential House using Fragility Curve..... | 207 |
| <i>Nor Hayati Abdul Hamid, Nor Mayuze Mohamad</i> | |
| Determination the Response Modification Factors of Buckling Restrained Braced Frames | 222 |
| <i>Mussa Mahmoudi, Mahdi Zaree</i> | |
| Structural Performance of Square Concrete Columns Wrapped with CFRP Sheets | 232 |
| <i>A. Belouar, A. Laraba, R. Benzaid, N. Chikh</i> | |
| Combined Use of Non-Destructive Tests for Assessment of Strength of Concrete in Structure | 241 |
| <i>Akash Jain, Ankit Kathuria, Adarsh Kumar, Yogesh Verma, Krishna Murari</i> | |
| Flexural Behaviour of External Reinforced Concrete Beams | 252 |
| <i>Rudy Djamaruddin</i> | |
| Long-Term Behaviour of Prestressed Basalt Fibre Reinforced Polymer Bars..... | 261 |
| <i>Maximus Pearson, Ted Donchev, Juan Salazar</i> | |
| Time Dependent Reliability Analysis of Steel I Bridge Girder Designed Based on SNI T-02-2005 and SNI T-3-2005 Subjected to Corrosion | 270 |
| <i>M. Sigit Darmawan, A.N. Refani, M. Irmawan, R. Bayuaji, R.B. Anugraha</i> | |
| Hybrid Precast Concrete Column and Sandwich Concrete Beam under Static Loading..... | 286 |
| <i>A. Akmaluddin, S. Murtiadi</i> | |
| Blind Source Separation Based Dynamic Parameter Identification of a Multi-Story Moment-Resisting Frame Building under Seismic Ground Motions | 299 |
| <i>Agung Budipriyanto</i> | |

| | |
|---|-----|
| Analysis of Integral Bridges by Finite Element Method..... | 308 |
| <i>Aslam Amirahmad, A. Rahman Al-Sinaidi</i> | |
| Mimicking Bone Healing Process to Self Repair Concrete Structure Novel Approach Using Porous Network Concrete..... | 315 |
| <i>Senot Sangadji, Erik Schlangen</i> | |
| Analysis of Rehabilitation Effect on the Improvement Capacity of Reinforced Concrete Beams with FEM..... | 327 |
| <i>M. Ahmadi</i> | |
| Seismic Response of Asymmetrical Infilled Concrete Frames | 341 |
| <i>T. Mahdi, V. Bahreini</i> | |
| Sustainable Design for Unpiled-Raft Foundation Structure | 353 |
| <i>Tan Kim Leong, Chan Swee Huat</i> | |
| Performance of CFRP Wrapped Square Reinforced Concrete Columns Subjected to Eccentric Loading | 365 |
| <i>Ida Bagus Rai Widarsa, Muhammad N.S. Hadi</i> | |
| Analytical Study on the Strengthened Steel Plate Shear Walls by FRP Laminate | 377 |
| <i>Fariborz Nateghi-Alahi, Masoud Khazaei-Poul</i> | |
| True Nonlinear Seismic Response Analyses of Soil Deposits | 387 |
| <i>Mahmud Kori Effendi, Eren Uckan</i> | |
| Investigation on Dynamics Nonlinear Analysis of Steel Frames with Steel Dampers | 401 |
| <i>M. Khazaei</i> | |
| Ductile Structure Framework of Earthquake Resistant of Highrise Building on Exterior Beam-Column Joint with the Partial Prestressed Concrete Beam-Column Reinforced Concrete | 413 |
| <i>Made D. Astawa, T. Tavio, I.G.P. Raka</i> | |
| GFRP Strengthening and Applications of Unreinforced Masonry Wall (UMW) | 428 |
| <i>S. Sailesh Sivaraja, T.S. Thandavamoorthy, S. Vijayakumar, S. Mosesaranganathan, P.T. Rathnasheela, A.K. Dasarathy</i> | |
| Increase Spillway Capacity using Labyrinth Weir | 440 |
| <i>Mamok Suprapto</i> | |
| Evaluation of the Use of Steel Bracing to Improve Seismic Performance of Reinforced Concrete Building | 447 |
| <i>Hendramawati A. Safarizki, S.A. Kristiawan, A. Basuki</i> | |
| Prediction of Deflection of the Composite Profiled Steel Sheet MDF-Board (PSSMDFB) Floor System | 457 |
| <i>A.P. Rahmadi, W.H. Wan Badaruzzaman, A.K. Arifin</i> | |
| Conservation of Islamia College Building in Pakistan..... | 465 |
| <i>Muhammad Ayub, Qaisar Ali, Khan Shahzada, Amjad Naseer, Muhammad Shoaib</i> | |
| Preservation of Historical Monumental Structures using Fibre Reinforced Polymer (FRP) - Case Studies..... | 472 |
| <i>S. Sailesh Sivaraja, T.S. Thandavamoorthy, S. Vijayakumar, S. Moses Aranganathan, A.K. Dasarathy</i> | |
| Damage Detection in an Offshore Jacket Platform using Genetic Algorithm based Finite Element Model Updating with Noisy Modal Data | 480 |
| <i>H. Malekzehtab, A.A. Golafshani</i> | |
| Pencil Pressuremeter Testing to Determining P-Y Curves for Laterally Loaded Deep Foundations | 491 |
| <i>Messaoud Farid, Nouaouria Md Salah, Paul J. Cosentino</i> | |
| Analysis of Correlations between Cone Penetrometer and Pencil Pressuremeter Parameters | 505 |
| <i>Messaoud Farid, Houam Abdelkader, Laouar Md Salah</i> | |
| Displacement Measurement of Soil Nail Walls using Close Range Photogrammetry..... | 516 |
| <i>Farid Esmaeli, Masood Varshosaz, Mohammad Saadatseresht</i> | |
| Utilization of Ultra-high Performance Fibre Concrete (UHPFC) for Rehabilitation – a Review | 525 |
| <i>Bassam A. Tayeh, B. H. Abu Bakar, M. A. Megat Johari, Yen Lei Voo</i> | |
| Seismic Upgrading Strategies for Non-Ductile Plan-Wise Irregular R/C Structures | 539 |
| <i>Marco Valente</i> | |
| Evaluation of Bond Strength between Normal Concrete Substrate and Ultra High Performance Fiber Concrete as a Repair Material..... | 554 |
| <i>Bassam A. Tayeh, B.H. Abu Bakar, M.A. Megat Johari, Yen Lei Voo</i> | |
| Non Destructive Testing of Bridge Pier - A Case Study | 564 |
| <i>D. Rama Seshu, N.R. Dakshina Murthy</i> | |
| Assessment of Bridge Management System in Iran | 573 |
| <i>Mehran Gholami, Abdul Rahman Bin Mohd Sam, Jamaludin Mohamad Yatim</i> | |
| Comparative Cost Analysis of Possible Seismic Retrofitting Schemes for Multi-Story Unreinforced Masonry Building | 584 |
| <i>Sushanta Roy, Md. Shahriar Rahman Khan, Syed Ishtiaq Ahmad</i> | |
| Sensitivity Analysis and Productivity Study of Directpipe Technology by using Simulation..... | 591 |
| <i>Apif M. Hajji</i> | |

| | |
|--|-----|
| The Utility Theory in Maintenance and Repair Strategy | 604 |
| <i>Oleg Kaplinski</i> | |
| The Support of Building Management in the Aspect of Technical Maintenance | 615 |
| <i>Marcin Gajzler</i> | |
| The Influence of Solutions Adopted at the Stage of Planning the Building Investment on the Accuracy of Cost Estimation | 625 |
| <i>Agnieszka Dziadosz</i> | |
| In-Situ Health Assessment of a Poorly Executed Pre-Stressed In-Service Concrete Bridge and Suggesting a Rehabilitation Strategy – A Case Study..... | 636 |
| <i>S.A. Rizwan, M.A. Qureshi, F.A. Najam</i> | |
| Post-Construction Problems of Embung in Lombok Island and the Operation and Maintenance Works | 648 |
| <i>Yusron Saadi</i> | |
| The Maintenance Evaluation of Sungkur Irrigation System at Ponorogo Regency..... | 661 |
| <i>S. Sobriyah, S. Sucipto, Agus Hari Wahyudi</i> | |
| Review of Indonesian Standard for Concrete Building Subjected to Fire | 668 |
| <i>S. Murtiadi</i> | |
| Engineering Quality Improvement of Kuantan Clay Subgrade using Recycling and Reused Materials as Stabilizer | 675 |
| <i>Achmad Fauzi, Usama Juniansyah Fauzi, Wan Mohd Nazmi</i> | |
| Effects of Oil Palm Shell and Curing Time to the Load-Bearing Capacity of Clay Subgrade | 690 |
| <i>Lillian Gungat, Elsa Eka Putri, Jodin Makinda</i> | |
| Performance of Foamed Asphalt under Repeated Load Axial Test | 698 |
| <i>Sri Sunarjono</i> | |
| Effect of Mixing Fiber Cocktail on Flexural Strength of Concrete | 711 |
| <i>Liaqat A. Qureshi, M. Ilyas Sheikh, Tahir Sultan</i> | |
| Ferrocement Jacketing for Restrengthening of Square Reinforced Concrete Column under Concentric Compressive Load..... | 720 |
| <i>A.B.M. Amrul Kaish, M.R. Alam, M. Jamil, M.A. Wahed</i> | |
| Application of ACM Brace Retrofitting Countermeasure to Steel Structure..... | 729 |
| <i>Tomiya Takatani</i> | |
| The Utilization of Self Compacting Concrete (SCC) in Producing Hollow Concrete Panel Wall to Provide Rapid Shelter for Post Disaster Area..... | 742 |
| <i>Mochamad Solikin, B. Basuki, Budi Setiawan</i> | |
| Torsional Strength of Ferrocement “U” Wrapped Normal Strength Beams with only Transverse Reinforcement..... | 752 |
| <i>Gopal Charan Behera, Rao T.D. Gunneswar, C.B.K. Rao</i> | |
| Characteristic of ‘Tulakan’ Soil as Natural Pozzolan to Substitute Portland Cement as Construction Material | 764 |
| <i>Yenny Nurchasanah</i> | |
| Overview and Preliminary Study of Approach - Slab Design Concept for Bridges..... | 774 |
| <i>Hj. Mohd Idrus B. Hj. Mohd Masirin, Rasimah Bt Md Zain</i> | |
| Seismic Protection of R/C Structures by a New Dissipative Bracing System | 785 |
| <i>Marco Valente</i> | |
| Improving the Seismic Performance of Precast Buildings using Dissipative Devices | 795 |
| <i>Marco Valente</i> | |
| Self-Compacting Concrete with Recycled Traditional Roof Tile Powder | 805 |
| <i>Bernardinus Herbudiman, Adhi Mulyawan Saptaji</i> | |
| An Evaluation of the Tropical Soils Subjected Physicochemical Stabilization for Remote Rural Roads | 817 |
| <i>S. Y. Zolfeghari Far, K.A. Kassim, A. Eisazadeh, M. Khari</i> | |
| Mixed Concrete Optimization using Fly Ash, Silica Fume and Iron Slag on the SCC's Compressive Strength | 827 |
| <i>D. Raharjo, A. Subakti, T. Tavio</i> | |
| Effect of Reclaimed Asphalt Pavement on the Properties of Asphalt Binders | 840 |
| <i>Arshad Hussain, Qiu Yanjun</i> | |
| The Prediction of Fatigue Life based on Four Point Bending Test..... | 851 |
| <i>F.P. Pramesti, A.A.A. Molenaar, M.F.C. van de Ven</i> | |
| Asessing the Compressive Strength Properties of Semi-Flexible Pavements..... | 863 |
| <i>A. Setyawan</i> | |
| Investigating and Comparing Traffic Induced and Restrained Temperature Stresses in a Conventional Rigid Pavement and Semi-Rigid Layers..... | 875 |
| <i>A. Setyawan, S.E. Zoorob, K.E. Hasan</i> | |
| Author Index | |