6th International Conference of Euro Asia Civil Engineering Forum (EACEF 2017)

MATEC Web of Conferences Volume 138 (2017)

Seoul, South Korea
22 - 25 August 2017

Part 1 of 2

Editors:

Jae-Woo Park
Han Ay Lie

Harianto Hardjasaputra
Parama Thayaalan

ISBN: 978-1-5108-5578-6
# TABLE OF CONTENTS

## PART 1

**EMBODIED ENERGY CALCULATION IN MITIGATING ENVIRONMENTAL IMPACT OF LOW-COST HOUSING CONSTRUCTION**

Larasati ZR Dewi, Sri Wahyuni Yuni, Suhendri, Triyadi Sugeng ................................. 1

**ENZYME BASED SOIL STABILIZATION FOR UNPAVED ROAD CONSTRUCTION**

Renjith Rintu, Robert Dilan, Fuller Andrew, Setunge Sajeeva, O’Donnell Brian, Nucifora Robert ........................ 9

**DUCTILITY OF FLY ASH - SLAG BASED REINFORCED GEOPOLYMER CONCRETE ELEMENTS CURED AT ROOM TEMPERATURE.**

Mahantesh N.B., Amarnath K., Raghuprasad B. K. .................................................. 19

**THE GESLULICE, AN INNOVATIVE IDEA FOR THE PRESENT SLUICE STRUCTURES**

de Gijt Jacob Gerrit, Heester Bob ............................................................... 28

**THE USE OF BOTTOM ASH FOR REPLACING FINE AGGREGATE IN CONCRETE PAVING BLOCKS**

Antoni, Klarens Kevin, Indranata Michael, Al Jamali Luhtfi, Hardjito Djwantoroto .................................................. 33

**PROCESSED BOTTOM ASH FOR REPLACING FINE AGGREGATE IN MAKING HIGH-VOLUME FLY ASH CONCRETE**

Antoni, Salistio Aldi Vincent, Wahjudi Samuel, Hardjito Djwantoroto, Hardjito Djwantoroto ........................................... 40

**EFFECT OF HIGH TEMPERATURE ON PROPERTIES OF GLASS CONCRETE**

Wang Wei Chien, Wang Shao Yu, Lin Cheng Hsun ........................................... 46

**INFLUENCE OF OIL PALM BIOMASS WASTE ON COMPRESSIVE STRENGTH AND CHLORIDE PENETRATION OF MORTAR**

Lim Nor Hasanah Abdul Shukor, Samadi Mostafa, Hussin Mohd Warid, Sam Abdul Rahman Mohd, Ariffin Nur Farhaya, Ismail Mohamed A., Lee Han Seung, Ariffin Mohd Azreen Mohd .................................................. 54

**PERFORMANCE OF LIGHTWEIGHT NATURAL-FIBER REINFORCED CONCRETE**

Hardjasaputra Harianto, Ngt Gino, Urgesa Girum, Lesmana Gabriella, Sidharta Steven .................................................. 61

**FACTORS INFLUENCING STRENGTH AND SETTING TIME OF FLY ASH BASED-GEOPOLYMER PASTE**

Leonard Wijaya Adhiyta, Jaya Ekaputri Januarti, Triwulan .................................................. 67

**FLEXURAL STRENGTH OF WALLS MADE OF HOLLOW CORE CONCRETE BRICK USING VARIOUS NOTCH MODELS AS THE INTERLOCKING DEVICE**

Gunawan Warihatho Nanang, Harjanto Yamar, Sumiyanto .................................................. 76

**EFFECT OF CANTALA FIBER AS TEXTILE REINFORCEMENT ON THE FLEXURAL BEHAVIOUR OF POLYMER MODIFIED MORTAR**

Purwanto Eddy, Kristiawan Stefanus, Santosa Bambang, T Istanto Pungky .................................................. 85

**OPTIMUM CONCRETE COMPRESSION STRENGTH USING BIO-ENZYME**

Bagio Tony Hartono, Basoekti Makno, Tistogondo Juslyentha, Pradana Sofyan Ali .................................................. 93

**STUDY OF VOLCANIC-ASH-IMPREGNATED-BACTERIA FILLER TO THE COMPRESSIVE STRENGTH OF CONCRETE**

Purwanto Hendry Anjar, Nugroho Ananto, Aprilin S Ririt .................................................. 100

**PERFORMANCE EVALUATION OF NEWLY DEVELOPED SUSTAINABLE BLOCKS FOR AFFORDABLE HOUSING IN MALAYSIA**

Raut Ashwin Narendra, Gomez Christy Pathrose .................................................. 108

**BUOYANCY-DRIVEN VENTILATION GENERATED BY THE DOUBLE-SKIN FAÇADE OF A HIGH-RISE BUILDING IN TROPICAL CLIMATE: CASE STUDY BANDUNG, INDONESIA**

Aziz Akhlish Dinial, Donny Koernianwan Mochamad, Suhendri .................................................. 118

**EXPERIMENTAL RESEARCH OF STABILIZATION OF POLLUTED MARINE DREDGED SEDIMENTS BY USING SILICA FUME**

Silitonga Ernesto .................................................. 126

**AN INVESTIGATION OF DAMAGE FACTORS IN INDUSTRIAL SCALE OF LIGHT-WEIGHT BRICKS PRODUCTION**

Dwi Wulandari Kiki, Jaya Ekaputri Januarti .................................................. 136

**THE EFFECT OF STEAM CURING ON CHLORIDE PENETRATION IN GEOPOLYMER CONCRETE**

Jaya Ekaputri Januarti, Syabrina Mutiara Inn, Narmiarsih Siti, Van Chanb Nguyen, Maekawa Kosichi, Setiamarga Davin H. E. .................................................. 146
THE APPLICATION OF PVA FIBER TO IMPROVE THE MECHANICAL PROPERTIES OF GEOPOLYMER CONCRETE .......................................................... 156
Manjalshuby Muhammad Latif, Ekaputri Januarti Jaya

MECHANICAL PROPERTIES OF LIGHTWEIGHT AGGREGATE CONCRETE REINFORCED WITH SODA CAN WASTE FIBRE ........................................... 163
Haryanto Yanuar, Widayatingrum Arnie, Heri Sudibyo Gathot, Maryoto Agus

MECHANICAL PROPERTIES OF GEOPOLYMER CONCRETE EXPOSED TO COMBUSTION .......................................................... 173
Rahmadina Annisa, Ekaputri Januarti Jaya

MODELLING OF CHLORIDE PENETRATION IN CONCRETE UNDER WET/DRY CYCLE .......................................................... 183
Hong Sung-In, Ann Ki-Yong

MECHANICAL PROPERTIES OF DIFFERENT BAMBOO SPECIES ........................................................................................................... 190
Awalluddin Dinic, Mohd Ariffin Mohd Azreen, Osman Mohd Hanim, Hussin Mohd Warid, A. Ismail Mohamed, Lee Han-Seung, Abdul Shakor Lim Nor Hasanah

LATERAL DISPLACEMENT AND SHEAR LAG EFFECT OF HIGH-RISE BUILDINGS WITH DIAGRID SYSTEM THAT IS CONSTRUCTED ABOVE A FRAME .......................................................... 200
Abd. Samat Roslida, Chua Fong Teng, Mohd Mustakim Nur Akmal Hayati, Anuar Fatin Izzaidah, Saad Sariffuddin, Abu Bakar Suhaime

APPLICATIONS OF VERTICAL STEEL PIPE DAMPERS FOR SEISMIC RESPONSE REDUCTION OF STEEL MOMENT FRAMES .......................................................................................................................... 210
Utomo Junaudi, Moestopo Maslinang, Surahman Adang, Kusumastuti Dyah

FLEXURAL CAPACITY OF THE CONCRETE BEAMS REINFORCED BY STEEL TRUSS SYSTEM .......................................................................................................................... 220
Djamaluddin Rudy, Frans Pieter Lourens, Irnawati Rita

STRESS DISTRIBUTIONS OF PSC BOX GIRDER BRIDGE DUE TO CREEP SHRINKAGE EFFECT .......................................................................................................................... 228
Abdi Praja Baskoro

FRAGILITY FUNCTION FOR ASSESSING SEISMIC RISK OF TYPICAL CONCRETE BRIDGE BY MEANS OF NONLINEAR STATIC AND DYNAMIC ANALYSIS .......................................................................................................................... 238
Sangadji Senot, Wirawan Niam A., Tropormera Enjels N., Purwanto Edy, Kristiawan S. A.

DEVELOPMENT OF ACACIA GLULAM WOOD EXTERIOR BEAM-TO-COLUMN CONNECTION WITH ANGLES AND STEEL RODS SYSTEM .......................................................................................................................... 248
Simanta Djoni, Suryoatmono Bambang, Tjondro Johannes A.

NUMERICAL MODELLING OF INTERIOR RC BEAM-COLUMN JOINTS FOR NON-ENGINEERED BUILDINGS STRENGTHENED USING STEEL PLATES .......................................................................................................................... 258
Rahmi Yulita, Saputra Ashar, Siswosukarto Suprapto

DYNAMIC RESPONSE OF AP1000 NUCLEAR ISLAND DUE TO SAFE SHUTDOWN EARTHQUAKE LOADING .......................................................................................................................... 268
Gan Buntara S., Nguyen Dinh Kien, Han Aiy Lie

FINITE ELEMENT MODELLING OF COMPOSITE CASTELLATED BEAM .......................................................................................................................... 278
Frans Richard, Parung Herman, Muhiddin Achmad Bakri, Irnawati Rita

FLEXURAL BEHAVIOUR AND PUNCHING SHEAR OF SELF-COMPACTING CONCRETE RIBBED SLAB REINFORCED WITH STEEL FIBRES .......................................................................................................................... 287
Ahmad Hazrina, Mohd Hashim Mohd Hishab, Abu Bakar Afidah, Hamzah Siti Hawa

THE PRIORITY IMPORTANCE OF ECONOMIC MOTIVATION FACTORS AGAINST RISKS FOR GREEN BUILDING DEVELOPMENT IN MALAYSIA .......................................................................................................................... 297
Mohamed Ghazali Farid Ezaneee, Zakaria Rozana, Aminudin Ezydiah, Yong Siang Lee, Alqaiyi Gamal, Abas Darul Nafis, Abidin Nur IzieAdiana, Shamsuddin Siti Mazzuana

ON THE EFFECT OF DRAG FORCES IN MOORING SYSTEM RESTORING FORCES .......................................................................................................................... 306
Ullah Zahid, Muhammad Naik, Lim Ji-Hoon, Choi Dong-Ho

INVESTIGATION OF NON-UNIFORM RUST DISTRIBUTION AND ITS EFFECTS ON CORROSION INDUCED CRACKING IN REINFORCED CONCRETE .......................................................................................................................... 311
Sutrisno Wahyuniarsh, Suprapto Gambiro, Faizal Latif, Stepu Haerul

CONCRETE FILLED SQUARE STEEL TUBULAR DEEP BEAM SUBJECTED TO BENDING-SHEAR .......................................................................................................................... 321
Uenaka Kojiro, Tsunokake Hissao

DISPUTE RESOLUTION METHODS IN THE CONSTRUCTION INDUSTRY SECTOR IN THE KINGDOM OF SAUDI ARABIA .......................................................................................................................... 329
Alshahrani Saad

RESEARCH, DEVELOPMENT AND APPLICATION OF HIGH PERFORMANCE EARTHQUAKE RESISTANT PRECAST SYSTEM AS GREEN CONSTRUCTION IN INDONESIA .......................................................................................................................... 339
Nurjaman Harri, Hariandiwa Binsar, Suprapto Gambiro, Faizal Latif, Stepu Haerul
PART 2

PRELIMINARY STUDIES ON STEEL SLAG AS A SUBSTITUTE FOR COARSE AGGREGATE ON CONCRETE .................................................................................................................. 512
Karolina Rahmi, Pandiangan Jannes

STRENGTH PROPERTIES AND MICRO-STRUCTURE OF STEEL SLAG BASED HARDENED CEMENTITIOUS COMPOSITE WITH GRAPHENE OXIDE ............................................................................ 520
Li Mao, Kim Jin-man

BAMBOO WASTE AS PART OF THE AGGREGATE PAVEMENT THE WAY GREEN INFRASTRUCTURE IN THE FUTURE .......................................................................................... 528
Sri Wiwono Mudjanarko, Machicky Mayestino, Nawir Rasidi, Indrawan, Ilkasan M. Setiawan

OVERVIEW: MICROBIAL AMENDMENT OF REMEDIATED SOILS FOR EFFECTIVE RECYCLING .................................................................................................................... 537
Kim Soo-Bin, Park Jun-Boum

TUNNEL PORTAL CONSTRUCTION USING SEQUENTIAL EXCAVATION METHOD: A CASE STUDY ...................................................................................................................... 547
Khan Rana Muhammad Asad, Emad Zaka, Jo ByungWan

DESIGNING AN ARDUINO-MICROPROCESSOR-AND-LABVIEW-BASED SYSTEM FOR MONITORING WAVE SPREAD IN THE GROUND CAUSED BY CONSTRUCTING ACTIVITIES .............................................................................................. 561
Lan Nguyen, Bao Chau Ngoc

INFLUENCE OF RICE HUSK ASH AND CLAY IN STABILIZATION OF SILTY SOILS USING CEMENT ....................................................................................................................... 570
Widjajakusuma Jack, Winata Hendro

SYSTEMATIC APPROACHES FOR SIGNAL PROCESSING OF SOIL SHAKING TABLE TEST ......................................................................................................................... 575
Lim Jun Xian, Lee Min Lee, Tanaka Yasuo

STABILITY ASSESSMENT OF ENZYME STABILIZED ROAD EMBANKMENTS ................................................................................................................................. 585
Singh Jaspreet, Robert Dilan, Wang Peihan, Giustozi Filippo, Mahmoodian Majtaba, Setunge Sujeeva, O’Donnell Brian

SUBSURFACE PROFILE MAPPING USING 3-D COMPRESSION WAVE IMAGING .............................................................................................................................. 595

BEARING CAPACITY CHARACTERISTICS OF STEEL PIPE PILES WITH WINGS INSTALLED IN SOIL CEMENT COLUMN .......................................................................................... 604
Hoang Kien Pham, Ito Daisuke

EVALUATION OF THE CAUSES OF BUKIT ANTARABANGSA 2008 LANDSLIDE BY USING FAULT TREE ANALYSIS ......................................................................................................... 614
Kazmi Danish, Qasim Sadaf, Harahap I.S.H

A REVIEW ON THE USE OF BAMBOO FOR EARTHWORK CONSTRUCTION ................................................................................................................................. 623
Ma’ruf Mohammad Farid

THE STABILITY OF CLAY USING VOLCANIC ASH OF MOUNT SINABUNG NORTH SUMATERA AND SUGARCANE BAGASSE ASH WITH CBR AND UCT VALUE .............................................................................. 631
Hastuty Ika Puji, Roeyanto, Ramadhany Giovanni

THE EFFECTIVENESS OF NEW AUSTRIAN TUNNELLING METHOD (NATM) FOR HYDRO POWER PLANT CONSTRUCTION: LAU GUNUNG POWER PLANT, NORTH SUMATERA, INDONESIA ............................................................................................................. 639
Ade Khoir Rizki, Dewanti Putri Antissa

BRIDGE DETERIORATION PREDICTION MODEL BASED ON HYBRID MARKOV-SYSTEM DYNAMIC ...................................................................................................................... 649
Widodo Soetjipto Jojok, Wahyu Adi Tri Joko, Anwar Nadjadi

A FRAMEWORK OF INITIATIVES FOR SUCCESSFUL APPLICATION OF LIFE CYCLE COSTING (LCC) IN INDUSTRIALISED BUILDING SYSTEM (IBS) IN MALAYSIAN CONSTRUCTION INDUSTRY .................................................................................................................. 659
Shamsuddin Siti Mazzuana, Zakaria Rozana, Hashim Norfashiha, Mohamad Yussuan Norazian, Sahamir Shaza Rina, Abidin Nur Eteadiana

IMPROVING CONSTRUCTION CLAIM MANAGEMENT IN MALAYSIAN CONSTRUCTION INDUSTRY .................................................................................................................. 668
Bakhary Nor Azmi, Adnan Hamimah, Ibrahim Azmi

CONSTRUCTION WORKER FATIGUE PREDICTION MODEL BASED ON SYSTEM DYNAMIC ...................................................................................................................... 674
Wahyu Adi Tri Joko, Ayu Ratna Winanda Lila

MODEL OF CONSTRUCTION WASTE MANAGEMENT USING AMOS-SEM FOR INDONESIAN INFRASTRUCTURE PROJECTS .................................................................................. 681
Elizar, Suripin, Wibowo Mochamad Agung
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE DESIGN OF ROAD EVALUATION AND MONITORING SYSTEM BASED ON GEOGRAPHICAL INFORMATION SYSTEM</td>
<td>885</td>
</tr>
<tr>
<td>ANALYSIS AND DESIGN OF ROAD AND BRIDGE INFRASTRUCTURE DATABASE USING ONLINE SYSTEM</td>
<td>891</td>
</tr>
<tr>
<td>ANALYSIS OF MODEL LOADING AND UNLOADING TIME OF SHIPS AT BOOM BARU PORT, PALEMBANG, INDONESIA</td>
<td>900</td>
</tr>
<tr>
<td>PROVIDING FACILITIES TO IMPROVE ACCESSIBILITIES TO RAILWAY STATION FOR ALL</td>
<td>909</td>
</tr>
<tr>
<td>A COMPARATIVE STUDY OF PERFORMANCE MEASUREMENT STANDARDS OF RAILWAY OPERATOR</td>
<td>919</td>
</tr>
<tr>
<td>INTERNET OF THINGS (IOT) AS GREEN CITY ECONOMIC DEVELOPMENT SMART TRANSPORTATION SYSTEM</td>
<td>929</td>
</tr>
<tr>
<td>THE ASSESSMENT OF NATURAL ROCK ASPHALT FOR THIN SURFACING MIXTURE DESIGN</td>
<td>939</td>
</tr>
<tr>
<td>CAN THE DESIGN OF SPACE-TRANSPORT DEVELOPMENT STRATEGIES INFLUENCE ON NOISE POLLUTION?</td>
<td>945</td>
</tr>
<tr>
<td>RIVERSIDE SUSTAINABILITY – OVERCOME PROBLEMS AND RELIABLE APPROACHES</td>
<td>955</td>
</tr>
<tr>
<td>LEACHATE OF DEMOLITION WASTE</td>
<td>965</td>
</tr>
<tr>
<td>DEAGGREGATION OF PROBABILISTIC GROUND MOTIONS IN THE KOTA KINABALU AND LAHAD DATU TOWNS OF SABAH, MALAYSIA</td>
<td>986</td>
</tr>
<tr>
<td>SPECIFYING RISK MANAGEMENT STANDARD FOR FLOOD RISK ASSESSMENT: A FRAMEWORK FOR RESOURCES ALLOCATION</td>
<td>996</td>
</tr>
<tr>
<td>ASSESSING THE IMPACT OF CLIMATE CHANGE ON THE WATER INTAKE OF THE HEADWORKS ON THE RED RIVER BASIN IN VIET NAM</td>
<td>1004</td>
</tr>
<tr>
<td>MAPPING OF BIOMASS PRODUCTION OF LAND DAMAGE ASSESSMENT TO REDUCE ENVIRONMENTAL CHANGES IN EAST JAVA PROBOLINGGO</td>
<td>1011</td>
</tr>
</tbody>
</table>

Author Index