



7th ICPT

data, citation and similar papers at core.ac.uk

brought to you by CORE

provided by Diponegoro University Institutional Repository

7th International Conference on Road and Airfield Pavement Technology 2011

Proceedings

3-5 August 2011
Queen Sirikit National Convention Center
Bangkok, Thailand

Hosted by

Supported By

Sponsored By

Managed By



The 7th International Conference on Road and Airfield Pavement Technology
7th ICPT: New Horizon of Pavement Technology, Bangkok, Thailand, August 3-5, 2011

Organizing Committee

Prof. Emeritus Dr. Direk Lavansiri (Chairman)	Assoc. Prof. Dr. Kasem Choocharukul
Mr. Aram Kornsobut (Co-chair)	Assoc. Prof. Dr. Suched Likitlersuang
Assoc. Prof. Dr. Boonsom Lerdhirunwong (Co-chair)	Asst. Prof. Dr. Kunnawee Kanitpong
Assoc. Prof. Dr. Phoosak Pheinsusom	Dr. Tunwin Svasdisant
Assoc. Prof. Dr. Sorawit Narupiti	Mr. Nawapol Brahmajaree
Assoc. Prof. Dr. Wisanu Subsonpon	Dr. Kaenvit Wongshusiri
Asst. Prof. Dr. Saksith Chalermpong	Dr. Boonchai Sangpetngam (Secretary)
Asst. Prof. Dr. Manoj Lohatepanont	Asst. Prof. Dr. Jittichai Rudjanakanoknad

Scientific Committee

Dr. Pichit Chamnongpipatkul (Senior Advisor)	Asst. Prof. Dr. Kunnawee Kanitpongse
Assoc. Prof. Anukal Isarasena Na Ayudhaya (Senior Advisor)	Dr. Kanwit Wongchusiri
Dr. Yongyuth Taesiri (Chairman)	Assoc. Prof. Dr. Suched Likhitluesuang
Dr. Chaiyatun Promsorn (Vice Chairman1)	Dr. Patratin Sarutipun
Assoc. Prof. Dr. Soravit Naruepiti (Vice Chairman2)	Dr. Dussadee Satirasetthavee
Mr. Hem Ngowsiri	Dr. Boonchai Saengpetchngam
Dr. Montri Dechasakulsom	Dr. Tunwin Sawasdisant (Secretary)
Dr. Panya Choopanich	Mr. Nawapol Brahmajaree
Assoc. Prof. Dr. Visanu Sapsompol	
Assoc. Prof. Dr. Sompong Sirisoponsilp	

Honorary Advisory Committee

Permanent Secretary, Ministry of Transport (Chairman)

Mr. Surachai Tansitpong

Director General, Department of Highways

Director General, Department of Rural Roads

Director General, Department of Land Transport

Director General, Department of Civil Aviation

Governor, Expressway Authority of Thailand

President, Airport of Thailand Public Company Limited

International Advisory Committee

Prof. T.F. Fwa
Professor, Department of Civil Engineering,
National University of Singapore

Prof. Richard Kim
Professor, Civil Engineering, NC State University

Prof. Gilbert Baladi
Professor, Department of Civil and Environmental
Engineering, Michigan State University

Prof. Andrew Collop
Director, Nottingham Center for Pavement Engineering
Transportation Engineering Center

Prof. Akira Kawamura
Professor, Department of Civil and Environmental
Engineering, Kitami Institute of Technology, Japan

Prof. Jeff Gagnon
Manager, Airport Pavement Sub-Team, AJP-6312
William J Hughes Technical Center

International Executive Committee

Prof. T. F. Fwa (Chairman, Singapore)
National University of Singapore, Singapore

Prof. Taeson Park (Korea)
National University of Technology, Korea

Prof. Kwang W. Kim (Korea)
Kangwon National University, Korea

Prof. Atsushi Kasahara (Japan)
Hokkaido Institute of Technology, Japan

Prof. K. S. Reddy (India)
Indian Institute of Technology, India

Dr. Zahidul Hoque (Australia)
Australia

Prof. Mohd Rosli Hainin (Malaysia)
University of Technology Malaysia

Dr. Low Boon Hwee (Malaysia)
Hanson Building Materials, Malaysia

Dr. Kelvin Lee (Singapore)

Prof. S. S. Jain (India)
Indian Institute of Technology Roorkee, India

Prof. Direk Lavansiri (Thailand)
Chulalongkorn University, Thailand

Asst. Prof. Kunnawee Kanitpong (Thailand)
Asian Institute of Technology, Thailand

Dr. Wang Haiqing (China)
China Academy of Transportation Sciences, China

Prof. Gary Chai (Australia)
Griffith University, Queensland, Australia

Samwoh Corporation Pte Ltd

Dr. Tan Hua Soon (Singapore)
Pavement Engineering Society Singapore

Prof. Bagus H. Setiadji (Indonesia)
Diponegoro University, Indonesia

Prof. David Hosin Lee (USA)
University of Iowa, USA

Preface

The 7th International Conference on Road and Airfield Pavement Technology 2011 is jointly organized by the Ministry of Transport in collaboration with Chulalongkorn University and Roads Association of Thailand. The conference sessions provide a wide range of academic topics for researchers and practitioners from around the world to exchange views and experiences under the theme of New Horizon on Pavement Technology.

The scientific program is combined with nine interesting topic areas, which are Construction, Design and Analysis, Maintenance and Rehabilitation, Testing and Evaluation, Management System, Economic and Environmental Issues, Materials, Operational Characteristics and Performance and Planning and Financing. The recent advancement in pavement technology is focused to help with pavement technological development in developing countries.

We hope that the readers would find this volume valuable as discussion topics of knowledge frontiers during the conference.



Dr. Yongyuth Taesiri

Chair of the Scientific Committee



Prof. Emeritus Dr. Direk Lavansiri

Chair of the Organizing Committee

Table of Contents

Preface	iv
Table of Contents	v

Keynote Lecturers

P11: Theoretical and Actual Trends of the Pavement Remaining Service Life and Their Impacts on the Cost-Effectiveness of the Pavement Management Decisions Author: BALADI, Gilbert Y., DAWSON, Tyler A., DEAN, Christopher M., HAIDER, Syed W. and CHATTI, Karim.....	2
P12: Using Road User-Oriented Approach in Pavement Evaluation: Critical Data and Potential Tools Author: KAWAMURA, Akira.....	27
P13: Challenges and Opportunities in Developing Sustainable Asphalt Pavement Author: KIM, Y. Richard	42

August 3, 2011.....Ballroom

A101: Materials; Study Of Potential Asphalt Binder Performance In Thailand Author: CHAROENTHAM, Nattaporn and KANITPONG, Kunnawee	44
A102: Materials; Effect of RAP on fracture properties of Binders using the SENB test Author: TABATABAEE, Hassan A., SWIERTZ, Daniel and BAHIA, Hussein U.	55
A103: Materials; Effects Of Warm Mix Additives On Mixture Workability And The Performance Implications Of Reduced Binder Aging Author: HANZ, Andrew and BAHIA, Hussain	66
A104: Materials; Beneficial Use Of Fine Recycle Concrete Aggregate For Utility Trench Reinstatement Author: LEE, Yang Pin Kelvin, HO, Nyok Yong, TAN, Jun Yew, LEE, Kok Kin, FOO, Say Yaw and ANG, Sok Ser Michelle.....	77
B101: Materials; Controlling Of Fatigue And Rutting Index Of Modified And Aged Asphalt binders Author: FAKHRI, Mansour, KERMANI, Soleimani and FAR, Sakhaei	88

B102: Materials; Effects Of Filler Characteristics On Properties Of Asphalt-Filler Mastic Author: ZULKATI, Angraini, WONG, Yiik Diew and SUN, Darren Delai.....	98
B103: Materials; An Examination Of Moisture Damage In Asphaltic Concrete Using Dynamic Creep Test Results Author: CHOMPOORAT, Thanakorn, LIKITLERSUANG, Suched, PUNYATARA, Sittipong and KOMOLVILAS, Veerayut	110
B104: Materials; Laboratory Calibration And Validation Of Shell Performance Transfer Functions In The Austoads Pavement Design Procedure Author: SALEH, Mofreh.....	121
C101: Materials; Laboratory Evaluation Of The Dynamic Stripping Test On Porous Asphalt Incorporating SASOBIT® Author: HAMZAH, Meor Othman, AMAN, Mohamad Yusri, SHAHADAN, Zulkurnain and MOHD HASAN, Mohd Rosli.....	130
C102: Materials; Evaluation Of Performance Of Asphalt Mixtures Composed Of Modified Asphalt And Reclaim Aggregate Author: SETIADJI, Bagus Hario, PURWANTO, Djoko and SUPRIYONO	142
C103: Materials; Segregation Characteristics Of Hot Mix Asphalt Based On Heap Test Author: ZHOU, Changhong, BAI, Long, LU, Dan vand CHEN, Liwei.....	152
C104: Materials; Developing A Resilient Modulus Master Curve For New Zealand Asphalt Author: STUBBS, Anthony, SALEH, Mofreh, KUHN, Kenneth, HUTCHISON, David and HALL, Simeon.....	162
C105: Materials; Mechanical Performances Of The Asphaltic Concrete Mixtures: The Stone Mastic Asphalt And Porous Asphalt Case Studies Author: BRAHMAJAREE, Nawapol, PRASERTSANG, Torsak and SVASDISANT, Tunwin	173
August 3, 2011.....Meeting Room 1	
A201: Testing And Evaluation; Test Methods To Evaluate The Effect Of Interface Bond Condition On Top-Down And Reflective Cracking Author: CHEN, Yu, LOPP, George and ROQUE, Reynaldo.....	186
A202: Testing And Evaluation; A Unified Linear Viscoelastic Constitutive Equation For Both Modified Asphalt Binders And Asphalt Concrete Mixtures Author: HUH, Jung-Do	197

A203: Testing And Evaluation; Evaluation Of Prediction Models And Permanent Deformation Characteristics Of Crushed Subbase Materials Author: LIM, Y, Kim, I. and CHO, Y.....	208
A204: Testing And Evaluation; Reevaluation Of Pavement Classification Number Method For Rigid Airfield Pavements Author: LIU, Yao-Bin, LEE, Ying-Haur, CHAN, Hsun-Kuan, LIN, Jyh-Dong and KER, Hsiang-Wei	215
B201: Testing And Evaluation; Study Of Moisture Sensitivity Of Some Aggregates In Asphalt Mix Author: DHASMANA, Heena and DAS, Animesh	230
B202: Testing And Evaluation; Development Of Simplified Measuring Vehicle With Accelerometers To Evaluate Pavement Surface Condition Author: ONIKURA, Kazunobu, ENDOH, Tetsuo, TOMISAWA, Ken and KANAI, Toshihiro.....	241
B203: Testing And Evaluation; Using Low-Cost Sensors For Pavement Monitoring: The Example Of Longitudinal Evenness Measurement Author: MENANT Fabien, MARTIN Jean-Marc and MANSUY Cédric	253
B204: Testing And Evaluation; Analysis Of Properties For Loads And Deformations With Portable Falling Weight Deflectometer Author: ZHA, Xudong and XIAO, Qiuming	264
C201: Testing And Evaluation; Importance Of Elastic Recovery In The DSR For Bind.Ers And Mastics Author: CLOPOTEL, Cristian S. and BAHIA, Hussain U	276
C202: Testing And Evaluation; Flexural Behaviour Of Cement Treated Crushed Rock Under Static And Dynamic Loads Author: YEO, Yang Sheng, JITSANGIAM, Peerapong and NIKRAZ, Hamid	287
C203: Testing And Evaluation; Moisture Susceptibility Of Cement Stabilized Basecourse Author: YEO, Yang Sheng, JITSANGIAM, Peerapong and NIKRAZ, Hamid	299
C204: Testing And Evaluation; The Effect Of Maximum Size Aggregate Gradation On Fracture Properties Of Asphalt Mixtures Author: XIAO, Yuan and PING, W. Virgil	310
C205: Testing And Evaluation; Failure Criterion Evaluation Of Unbound Granular Base Course Author: SIRIPUN, Komsun, JITSANGIAM, Peerapong and NIKRAZ, Hamid	323

August 3, 2011.....Meeting Room 2

A301: Maintenance And Rehabilitation; Evaluation Of Pavement Condition Monitoring Interval For Roads With Multiple Lanes Author: HAIDER, SyedWaqar, CHATTI, Karim and BALADI, Gilbert Y.	334
A302: Maintenance And Rehabilitation; Long-Term Pavement Performance Effectiveness Of Preventive Maintenance Treatment Using MARKOV Chain Algorithm Author: HAIDER, SyedWaqar, CHATTI, Karim and BALADI, Gilbert Y.	345
A303: Maintenance And Rehabilitation; An Assessment Of Long And Short Term Effectiveness Of Pavement Preservation Treatments Author: ONG, Ghim Ping and SINHA, Kumares C.....	356
A304: Maintenance And Rehabilitation; A Study On Rehabilitation Of The North Runway At Imam Khomeini International Airport In Iran Author: SINHA, Kumares C and SHEIKH SANDIANI, Shahram.....	367
B301: Maintenance And Rehabilitation; Rehabilitation Of Aircraft Pavements Using Concrete Blocks Having Mechanical Interlock Author: LAZAR, Michael and EMERY, John	377
B302: Maintenance And Rehabilitation; Permanent Reflective Markings For Concrete Products And Other Pavement Surfaces Author: LAZAR, Michael and EMERY, John	387
B303: Maintenance And Rehabilitation; Sustainable Concrete Road Maintenance Solution Author: NEDUMARAN, Ramasamy, YOONG, Chin Chong, ZHONG, JinJiang and KHOO, Vera	395
B304: Maintenance And Rehabilitation; Benchmarking Evaluation For Investigating pavement structure deterioration Author: MORI, Hisashi, AOKI, Kazuya and OKADA, Koichi4	403
C301: Maintenance And Rehabilitation; Economical Design Of Rehabilitation Scheme Of old pavements; A case study Author: REDDY, Madhava Reddy N and BASU, Chandan Basu	414
C302: Maintenance And Rehabilitation; Assessment And Maintenance Of A Sealed Haul Road In Australia Author: CHAKRABARTI, Srijib and MARDESIC, Tyrone	425

C303: Maintenance And Rehabilitation; Effect Of Pavement Service Level Upon Operation Timing Of Periodical Inspection Policy Author: AOKI, Kazuya, MORI, Hisashi and OKADA, Koichi	436
C304: Maintenance And Rehabilitation; A Comparative Survey On Winter Maintenance Methods Through Analytical Hierarchical Process Author: FAKHRI, Mansour and MOSALLANEJAD, Mona	446
C305: Maintenance And Rehabilitation; A Note For The Mastermind On Highway Maintenance Practice Author: CORVANICH, Manus	456

August 3, 2011..... Auditorium

A401: Management System; Damage-Dispress Models And Virtual Road Network Author: LEPERT Philippe and MENANT Fabien.....	468
A402: Maintenance And Rehabilitation; Efforts Towards Developing Of GIS & GUI Based Pavement Maintenance Management System For Use By Small To Medium-Sized Cities In India Author: CHOPRA, Tanuj, PARIDA, Manoranjan and KWATRA, Naveen	480
A403: Management System; Modelling Pavement Performance Using Incremental-Recursive Techniques In Combination With Mechanistic-Empiricall Principles Author: DRENTH, Kars and WAHAB, Yunus	492
A404: Management System; Monitoring And Evaluation Model Of Pre- And Post-Process Of Education And Training Of Road Officials In Indonesia Author: MULYONO, Agus Taufik and SETIADJI, Bagus Hario	503
B401: Management System; Quantification Of The Effectiveness Of Pavement Preservation At The Network Level Author: DAWSON, Tyler A., BALADI, Gilbert Y., DEAN, Christopher M., HAIDER, Syed Waqar and CHATTI, Karim.....	511
B402: Management System; Effect Of Sample Size On The Accuracy Of Pavement Condition Data Author: DEAN, Christopher M., DAWSON, Tyler A., BALADI, Gilbert Y., HAIDER, Syed W. and CHATTI, Karim,.....	522
B403: Management System; Implementation Of A Pavement Management System On A Typical University Campus Author: LEE, K. WAYNE ¹ , SINGH, K. Ajay MS and HARTMAN, J. Daniel MS	532

B404: Operational Characteristics And Performance; Effect Of Bitumen Modification And Mineral Fillers On Binder Fatigue Author: HINTZ, Cassie, CLOPOTEL, Cristian and BAHIA, Hussain U.	546
C401: Accessing Pavement Condition Using Function Expressions Of Deflection(S) And Both Static And Dynamic Back-Caculation Methods Author: ENDO, Katsura	555
C402: Full Depth Reclamation With Stabicol Binder In Thaland Author: LENFANT, Michel	567
C403: Use of very hard grade bitumen in road construction Author: LENFANT, Michel	577
C404: Traffic Noise, A Major Concern For Road Users And Neighbourhood. How To Reduce It? Author: LENFANT, Michel	578
August 4, 2011.....	Ballroom
A101: Materials; WMA Workability And Application Author: GUWE, Vincent, ARULESWARAN, Nagarobini, KOENDERS, Burgard, SANGSUWAN, Prasert and XU, Liting	594
A102: Materials; Effect Of Changing Theoretical Maximum Specific Gravity On Asphalt Mixture Design Author: EL SAYED, Mohamed Abdel Ghany	606
A103: Materials; Optimization Of Mechanical Properties Of Cement Treated Demolition Waste Author: XUAN, D.X., HOUBEN, L.J.M., MOLENAAR, A. A.A. and SHUI, Z.H.....	628
A104: Design And Analysis; Stress And Strain Distribution In TAR-Containing Antiskid Layers Of Runways Author: XIAO, Y., VAN DE VEN, M.F.C, MOLENAAR, A.A.A. and WU, S.P.	643
B101: Construction; An Accurate And Efficient Quality And Better Workmanship Control Of Asphalt Pavement Construction Using An Innovative Profiler Author: ENDO, Katsura, NODA, Etsuro, KUDO, Akira and TSUNEMATSU Tadashi	655
B102: Construction; Green & Quality Rural Roads In Malaysia Author: Daud, D., Tan, P. C., Lee, M. and Wu, D. Q.	667

B103: Planning And Financing; Factors Influencing Decision Making Process Of Transportation Infrastructure Project In Natural Extreme Condition: A Case Study Of Semarang-Solo Toll Road Project Author: HERMAWAN, Ferry, SOETANTO, Robby, MUHROZI and INDARTO, Himawan.....	678
B104: Planning And Financing; Introduction Of The Life Cycle Costing Factor Of Road Infrastructures For The Optimization Of Budgeting And Investment Decisions Author: HOFFMANN M.	689
August 4, 2011.....Meeting Room 1	
A201: Testing And Evaluation; The Permanent Deformation Criterion Of Unbound Granular Materials (UGMS) Layer Author: SIRIPUN, Komsun, JITSANGIAM, Peerapong and NIKRAZ, Hamid	704
A202: Testing And Evaluation; The Unbound Granular Base Course Design With Ultimate Strength Concept Author: SIRIPUN, Komsun, JITSANGIAM, Peerapong and NIKRAZ, Hamid	713
A203: Testing And Evaluation; Evaluation Of IN-SITU Subgrade Strength For Low Volume Roads Author: SABAVATH, Shankar, VARRI, Rajivkanth, D.S.N.V, Amar Kumar and C.S.R.K, Prasad	725
A204: Testing And Evaluation; Non-Destructive Testing And Assesment Of An Airport Pavement In Western Australia Author: FOULSHAM, David and CHAKRABARTI, Srijob	736
B201: Testing And Evaluation; A Wholistic Approach To Testing & Evaluation Hot Mix Asphalt (HMA) Author: SINADINOS, Con and MCGRANE, Kieran.....	745
B202: Testing And Evaluation; Temperature Prediction Model For Flexible Pavement Of Freeways In Taiwan Author: LIAO, Chi-Chou, HUANG, Wei-Hsing and CHEN, Shun-Hsing.....	756
B203: Testing And Evaluation; Study Of Moisture Sensitivity Of Some Aggregates In Asphalt Mix Author: DHASMANA, Heena and DAS, Animesh	768
B204: Testing And Evaluation; Basic Study On Structural Evaluation To Pavement On Jacket Type Pier Author: Use Of FWD Test Author: KAWANA, Futoshi, MAEKAWA, Ryota and SUZUKI, Noriyoshi	779

C201: Operational Characteristics And Performance; Characteristics Of Egyptian Rural Road Roughness Author: EL SAYED, Mohamed Abdel Ghany and D MOHAMADY, ahme	791
C202: Operational Characteristics And Performance; Improved Winter Maintenance In (Austria) Salt Application Recommendations For Winter Maintenance Personal And Driving Recommendations For Road Users Author: HOFFMANN M., NUTZ P., BLAB R. and NEUHOLD J.	805
C203: Operational Characteristics And Performance; Warm Mix Asphalt Test Sections In Thailand Author: JAMNONGPIPATKUL, P., SONTHONG, S. and TEPSRIHA, P.	819
C204 Operational Characteristics And Performance; Truck Traffic Volume Distributions And Axle Load Spectra From Weight-In-Motion Data Author: JIANG, Yi, CHEN, Huaxin and LI, Shuo.....	832
C205: Operational Characteristics And Performance; Evaluation The Effectiveness Of Pavement Groove Patterns In Hydroplaning Control Author: JU, Fenghua, FWA, Tien Fang and ONG, Ghim Ping	848
August 4, 2011.....Meeting Room 2	
A301: Design And Analysis; A Basic Study On Interaction Between Vehicle Dynamics And Dynamic Load Taking Into Account Of Pavement Damage Author: JOMOTO, Masakazu, KAWAMURA, Akira, NAKATSHUJI, Takashi, NAKATSHUJI, Takashi and TOMIYAMA, Kazuya.....	860
A302: Design And Analysis; Structural Design And Sensitivity Analysis Of Semi-Rigid Pavement Of A Motorway Author: JUDYCKI, Jozef and JASKULA, Piotr.....	874
A303: Design And Analysis; Concrete Pavement Slabs On Bonded And Unbonded Base - Modeling And Experimental Verification Author: MANOKHOON, Kitti, TIA, Mang, CHOUBANE, Bouzid and BERGIN, Michael	885
A304: Design And Analysis; Mechanical Analysis Of Asphalt Pavement On Bridge Deck Considering Solar Radiation Author: CHEN, Jing-yun and LIU, Jia-yin	900
B301: Design And Analysis; 3D FEM Modeling Of Conventional Block Paving & How Mechanically-Interlocking Pavers Can Be A Viable Alternative Author: YONG, David Hsien Ta and DYSKIN, Arcady	912

B302: Design And Analysis; Modeling Tire-Pavement Contact Pressure Distribution Under Rolling Conditions Author: YANG, Jiasheng, FWA, Tien Fang, CHEW, Chye Heng and ONG, Ghim Ping	924
B303: Design And Analysis; Study On Effects Of Nonlinear Distribution And Slab Thickness On Thermal Stress Of Airport Concrete Pavement Author: TSUBOKAWA, Yukitomo, MIZUKAMI, Junichi and SAITOU, Yutaka.....	936
B304: Design And Analysis; Mechanistic Method For Flexible Pavement Design In Australia Author: MARDESIC, Tyrone and CHAKRABARTI, Srijob.....	947
C301: Design And Analysis; An Overview Of Recent Development Of Asphalt Pavements In Thailand Author: TAESIRI, Yongyuth and SAWANGSURIYA, Auckpath	958
C302: Design And Analysis; Modeling Of Flexible Pavements With Thin Bituminous Surfacing-Using Linear Elastic Theory And Finite Element Method Author: CHAI, G., GUAN, H., LOO, Y. C., VAN STADEN, R. C. and WHITTAKER, K.	969
C303: Economic And Environmental Issues; Use Of Recycled Concrete Aggregate For The Construction Of Aircraft Stand Rigid Pavement At (Singapore) CHANG HI Airport Author: HO, Nyok Yong, LEE, Yang Pin Kelvin, FWA, Tien Fang, TAN, Jun Yew, HON, Lip Yung, LIM, Wee Fong, HOW, Choon Onn and KOH, Sim Yi	978
C304: Economic And Environmental Issues; Highway Junction Design For Energy Efficiency Author: MUJIB, Rahman and JOHN, Greenwood	988
C305: Economic And Environmental Issues; Investigation Of Novel Methods To Harvest Solar Energy From Asphalt Pavements Author: Lee, Kang-Won Wayne, YANG, Sze Chang and CORREIA, Andrew.....	999
August 4, 2011.....	Auditorium
A401: Materials; Thermal Susceptibility And Low Temperature Cracking Potential Of Different Sources Of Asphalt Binders Author: ALOTAIBI, Saleh and SALEH, Mofreh	1008

A402: Materials; Comparison Of RUT And Fatigue Resistances Of AC Mixtures Using Three Types Of Asphalt Binder

Author: SVASDISANT, Tunwin , KLUMMENG, Apisit, TONGMARK, Kittisak and ANUVECHSIRIKIAT, Sekchai 1022

A403: Materials; Effect Of Aggregate Size On Strength Of Recycled Aggregate Concrete Pavement

Author: MUDAVATH, Heeralal and PANCHARATHI, Rathish Kumar 1033

A404: Materials; Development And Application Of High Durable Grout For Airport PC Pavement

Author: KITAZUME, Masaki, HAYANO, Kimitoshi and MAEKAWA, Ryota 1042

B401: Materials; Characteristics Of Hydrated Cement Treated Crush Rock Base (HCTCRB) For Western Australian Roads

Author: CHUMMUNEERAT, Suphat, JITSANGIAM, Peerapong and NIKRAZ, Hamid 1054

B402: Materials; DSC Constitutive Modeling Of Hydrated Cement Treated Crushed Rock Base As A Road Base Material For Western Australia Roads

Author: KHOBKLANG, Pakdee, VIMONSATIT, Vanissorn, JITSANGIAM, Peerapong and NIKRAZ, Hamid 1064

B403: Materials; Experimental Evaluation Of Recycled Asphalt Properties

Author: CHEN, Jing-yun, LI, Yu-hua and ZHAO, Hui-min 1077

B404: Materials; The Development And The Performance Of The High Stability Asphalt Mixture

Author: ABE, Nagato, SHAFEEQ, Ahamad, KOHATA, Yukihiro and HIRATO, Toshiaki 1088

C401: Materials; Performance Of Asphaltic Concrete Using Steel Slag Aggregate

Author: HAININ, Mohd Rosli, SABRI, Mohd Fahmi Bin Mohammad, AZIZ, Mohd Azizi Abdul, HAMEED, Mohd Anwar Sahul and RESHI, Wasid Farooq 1100

C402: Materials; Stability Of Runway Grooving Under Repeated Large Aircraft Loads

Author: KAWAMURA, Naoya, KAWANA, Futoshi and MAEKAWA, Ryota 1110

C403: Materials; Characterization Of Asphalt Mixture Stress-Strain Behavior On Push-Pull Fatigue Tests And Visco-Elastic Analyses

Author: MAEKAWA, Ryota and HIMENO, Kenji 1123

C404: Materials; Zycosoil Nanotechnology For Asphalt Road Paving
Author: MEHTA ,Prakash and RANKA, Ajay 1135

C405: Materials; Mix Design For Cement Grouted Bituminous Mix
Author: KHAN, Islaq and DAS, Animesh..... 1147

Poster Presentation

P1: Economic And Environmental Issues; Life –Cycle CO2 Assessment Of WMA On Pavement Construction In Japan
Author: KAWAKAMI, Atsushi, NITTA, Hiroyuki and KUBO, Kazuyuki 1158

P2: Economic And Environmental Issues; Study On Noise Reduction By Drainage Asphalt Pavement In Japan
Author: ITAN, Masashi I and KUBO, Kazuyuki 1167

P3: Design And Analysis; A Study On Arrangement Principle For Steel Deck Pavement And Suitable Paving Material
Author: WENG , Yi-Wei, LIN, Jyh-Dong, HUANG, Wei-Hsing and CHEN, Hao-Hsien..... 1176

P4: Materials; Effects Of Basic Of Oxygen Furnace Slag As Aggregate On Stone Mastic Asphalt
Author: LIN, Jyh-Dong, Chen, Shih-Huang, Yeh, Ming-Chin, Yuan, Chia-Wei and Lin, Ping-Chuan 1187

P5: Materials; European Empirical Specifications For Permanent Defoemation Resistance Of Aphalt Concrete
Author: MILJKOVIC, Miomir..... 1195

P6: Operational Characteristics And Performance; Effect Of Filling Cracks On Geosynthetics Efficiency For Prevention Of Reflective Cracks In Asphalt Overlay
Author: MOGHADDASNEJAD, Fereidoon, NOORY, Alireza, NOTASH, Mohammad and TOOLABI,Saeed, 1206

P7: Testing And Evaluation; Estimataion Of Soil Water Content From Time Domain Reflectometry Sensors In Multiple Soils
Author: CHO, Myung-hwan, LEE, Yoon-han, KIM, Nakseok, JIN, Junghoon and SHIM, Jae-pill 1216

P8: Development Of Flexible Pavement Knowledge Decision Net
Author: LIN, Jyh-Dong , CHEN, Hao-Hsien , HSU, Hui-Mi and Yeh, Li-Hsu 1227

P9: Research Of Tension Strength On Asphalt Pavement In Taiwan Northeast

Author: HSU, Hui-Mi, CHEN, Hao-Hsien, WENG, Yi-Wei and HONG, Zhi-Wen..1235

P10: Management Systems; Prioritization Of Maintenance Management Decisions For Urban Roads Using HDM-4

Author: PARIDA, Manoranjan, SHAH, Yogesh, JAIN, S.S. and TIWARI, D.1242

P11: Management Systems; Framework For Developing Information Technology Based Maintenance Management Strategies For Multi Lane Highways

Author: JAIN, S.S., CHAUHAN, M.P.S., CHAUHAN, M.P.S. and VERMA, S.K. .1252

P12: Construction; Evaluation Of Mastic Asphalt Concrete As A Wearing Course Using Different Types Of Fillers

Author: VASAN, R.M, AZADANI, nasar and CHOPRA, Tanuj.....1263

P13: Testing And Evaluation ; Evaluation Of FWD Software For Airfield Pavements

Author: TAREFDER, Rafiqul A. and AHMED, Mesbah U.1270

P14: Economic And Environmental Issues ; Analyzing Strategic Issues Of Environmental Impact Assessment For Highway Projects With A Case Study Of Indian National Highway

Author: CHOPRA, tanuj, JAIN, Kunal, CHOWDHRY, Parinita and

AGGARWAL, Meena1281

P15: Management Systems; The Examination Of Effective Maintenance-Technique Of The Private Toll Road

Author: NAKAMURA, Hiroyasu, NISHIYAMA, Taizo and IHARA, Tsutomu 1292

P16: Testing And Evaluation; Evaluation Of Moisture Susceptibility And Stripping Resistance For Warm-Mix Asphalt Mixtures Containing Adhesion Promoter

Author: KIM, Yongjoo, YANG, Sunghin, CHO, Dongwoo, LEE, Jaejun,

JEONG, Keydong, KIM, Yeongmin, Hwang, Sungdo and KWON, Sooahn.....1304

P17: Highway rehabilitation in Esfahan using an SBS polymer modified binder

Author: KHOSHROO Hamed, KAVUSSI, Amir..... 1316

Author index..... 1320