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PROGRAM AND ABSTRACTS

The 3^{ed} International Conference on Constructions and Building Engineering (ICONBUILD 2017) August 14 - 17, 2017 Palembang, Indonesia

"Smart Constructions Toward Global Challenges"





This Book Belongs to

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WELCOME MESSAGE FROM RECTOR OF SRIWIJAYA UNIVERSITY

Distinguished guest, respected participants

Ladies and Gentlemen

Dear all participants, welcome to Palembang, Indonesia. I am indeed honored to have all of you who have come from many parts of the world to the Third International Conference on Construction and Building Engineering (ICONBUILD 2017) during $14^{th} - 17^{th}$ August 2017 at Palembang, Indonesia.

This year's conference is organized by Universitas Sriwijaya in collaboration with Universiti Teknologi Malaysia (UTM). Please allow me in this occasion to deliver our kindness in hosting and organizing this conference. It is our great pleasure to see that the conference is effective media to link the engineers from many parts of the world, especially those with a commitment to advance sustainable development and environmental friendly buildings and infrastructures. I encourage all participants to participate actively in the interesting annual discussions over the next days. I wish everyone a successful and worthy conference.



The theme for ICONBUILD 2017 is 'Smart Constructions towards Global Challenges'. It is expected will be worthwhile platform for researchers and engineers to present their finding in the areas on multidisciplinary related to civil engineering and built environment issues for any global challenges. Also, it has provided an opportunity for the professionals and researchers to learn and share about the latest development and research in civil engineering which corresponds to Sriwijaya University's vision and mission to increase journal publishing in Civil Engineering Department.

I appreciated all the members of the organizing committee who have worked hard to prepare the conference and who has dedicated their valuable time to organize this conference. The conference committee expresses our gratitude and great appreciation towards all the authors, reviewers, and participants for the great contribution to ensure the success of this event. Finally, we would like to say thank you to all participants and have a nice day in Palembang.

Rector of Sriwijaya Univesity Prof. Dr. Ir. Anis Saggaff, MSCE



WELCOME MESSAGE FROM DEAN OF ENGINEERING FACULTY OF SRIWIJAYA UNIVERSITY

I am very pleased to have the opportunity to welcome you to the Third International Conference on Construction and Building Engineering (ICONBUILD) 2017, which is hosted by Sriwijaya University and cooperated with Universiti Teknologi Malaysia. This conference is organized by Civil Engineering Department, with full support of the Faculty of Engineering, Sriwijaya University.



It is an honoured to have outstanding speakers from around the world. This international event gathers researchers, educators and experts from government, the private sector, various international organizations, academia and the civil society involved in the general areas of of civil engineering and built environment to disseminate their latest research results. I am confident that the ICONBUILD 2017 will be an excellent opportunity to exchange views and raise awareness of the importance of the two fundamental and linked topics of the conference (Engineeringand Environment) in enhancing the live in our country and worldwide.

Finally I would like to thank all those who have contributed to this Conference. I wish to express my gratitude to the Organizing Committee and the Scientific Committee for their diligence. The various sponsors are also thanked for their kind support.

Dean of Engineering Faculty of Sriwijaya Univesity Prof. Ir. Subriyer Nasir, M.S., Ph.D



WELCOME MESSAGE FROM EXECUTIVE CHAIRMAN OF ICONBUILD 2017

On behalf of the organizing commitee, I am delighted to welcome you to the Third International Conference on Construction and Building Engineering (ICONBUILD 2017) during 14th to 17th August 2017 at Palembang, Indonesia. ICONBUILD 2017 is the biennial International conference organized by Sriwijaya University (UNSRI) and Universiti Teknologi Malaysia (UTM).

The theme for ICONBUILD 2017 is 'Smart Constructions towards Global Challenges'. It is hoped that this conference will be useful platform for researchers to present their finding in the areas on multidisciplinary related to civil engineering and built evironment issues. This conference will provide opportunities to exchange ideas, knowledge, and development of the latest research among the engineers and researchers.ICONBUILD 2017 received 260 submissions from 18 countries and 125 affiliations that were reviewed by ICONBUILD reviewers.



Please allow me to deliver our best regard to South Sumatera Governor, Ir. H. Alex Noerdin, S.H., for the help and support.

We are very honored to have Prof. Datuk Ir. Dr. Wahid Omar (UTM, Malaysia), Prof. Dr. Ir. H. Anis Saggaff, MSCE (Sriwijaya University, Indonesia), Prof. Kohei Komatsu Dr. Agric. Sci. (Kyoto University, Japan), Prof. Dr. Mohammad Ismail (UTM, Malaysia), and Prof. Ir. Dr. Mahmood Md Tahir (UTM, Malaysia) as a keynote speakers.

The conference committee expresses its gratitude towards all the author, reviewers, and participants for the great contribution to ensure the success of this event. Finally, I sincerely thank all the members of the organizing committee who have worked hard to prepare the conference.

Executive Chairman Prof. Dr. Ir. Anis Saggaff, MSCE



To all who presented for exceptional support to **ICONBUILD 2017**

- * All participants (paper contributor and listener)
- Sponsors: PT. Bank Sumsel Babel, PT. Bank Nasional Indonesia, PT. Bank Jawa Barat, PT. Pertamina EP Prabumulih, PT. Gunung Garuda, PT. Kaltim Prima Coal, and Telkomsel
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- Others: Aryaduta Hotel and River Side Restaurant





GENERAL INFORMATION

Date

14-17 August, 2017

Venue

The conference venue is Aryaduta Hotel, which is located at POM IX Street, Kompleks Palembang Square Mall, Lorok Pakjo, Ilir Barat I, Kota Palembang, Sumatera Selatan 30137, Indonesia.

Language

English is the official language in the conference. Papers are written and presented orally in English.

Presentation Notes

Each presentation is allocated 10 minutes, followed by 5 minutes for Q&A. Speakers should arrive 15 minutes before the start of the session, and confirm their names and institution to the session chair.

Internet Access

Free Wi-Fi access will be available in the conference rooms. ID and password for the service can be obtained from the registration desk.

Opening Ceremony

Free Indonesian traditional drinks and foods are served for participants at Griya Agung. Opening ceremony is held on 14th August 2017 from 19:00 to 21:00.

Lunch

Participants will be provided lunches for 2 days (15-16 August 2017) at Grand Ballroom Aryaduta as scheduled in the conference time table.

Traditional "Bidar" Boat Race

Participants and accompanying persons in ICONBUILD 2017 are invited to join a post conference program in a The Annual Bidar Race Tour Package. Date of tour on Thursday, 17 August 2017 [08.00 AM to 03.00 PM].



PARALLEL SESSIONS

SUBTOPIC: SIM-001 – SIM-027, SCE-047 – SCE-053, GSC-016 – GSC-024

	Ballroom 1 - Session I - 15 August 2017 (13.00 – 15.00)						
No.	Time	Paper ID	Title	Authors	Affiliation		
1	13.00 - 13.15	SIM-001	Behavior of Bagasse Ash-Calcium Carbide Residue stabilized Soil with Fiber inclusion	John Tri Hatmoko and Hendra Suryadharma	Department of Civil Engineering , Universitas Atma Jaya Yogyakarta, Indonesia		
2	13.15 - 13.30	SIM-002	Preliminary Experimental Study of Making Geopolymer Paste as Passive Fire Protection System	Fransisca Maria Farida, Adang Surahman, Ananta Sofwan, and Rino Rakhmata Mukti	Department of Civil Engineering, Civil Engineering and Environmental Faculty Institut Teknologi Bandung, Bandung		
3	13.30 - 13.45	SIM-003	Mechanical Properties of Concrete Containing 100% Recycled Homogeneous Ceramic Aggregates	Nor Hasanah Abdul ShukorLim, Mostafa Samadi, Nur Farhayu Ariffin, Hosein Mohammadhosseini, Nur Hafizah Abd Khalid, Abdul Rahman Mohd. Sam	UTM Construction Research Centre, Institute for Smart Infrastructure and Innovative Construction, Faculty of Civil Engineering, Universiti Teknologi Malaysia,81310, Johor, Malaysia		
4	13.45 - 14.00	SIM-004	Mechanical Properties of Cement Concrete Composites Containing Nano-metakaolin	Steve Wilben Macquarie Supit, RilyaRumbayan, and Adriana Ticoalu	Manado State Polytechnic, Department of Civil Engineering, North Sulawesi, Manado, Indonesia		
5	14.00 - 14.15	SIM-005	Effects of Aggregate Gradation on Cracking Performance of Vietnamese Wearing Course Mixtures at Low Temperature	Nhat Thanh Tran and Osamu Takahashi	Department of Civil and Environmental Engineering, Nagaoka University of Technology, Niigata, Japan		
6	14.15 - 14.30	SIM-006	Experimental Study on 60 MPa Steel-Fiber Concrete	Sisi Nova Rizkiani, James Saputra, and Johannes Adhijoso Tjondro	CivilEngineering Department, Faculty of Engineering, Parahyangan Catholic Unversity, Bandung, Indonesia		
7	14.30 - 14.45	SIM-007	The Developing of Elastic Modulus Measurement to Asphalt Concrete Using Compressive Strength Test	Arief Setiawan, Latif Budi Suparma , and Agus Taufik Mulyono	Civil and Environmental Engineering Department, Faculty of Engineering, Universitas Gadjah Mada		
8	14.45 - 15.00	SIM-008	Mudflow Utilization for Construction Materials of Tertiary Irrigation Canal Lining	Subandiyah Azis and Kustamar	National Institute of Technology Malang, East Java, Indonesia		



	Ballroom 1 - Session II - 15 August 2017 (15.15 – 17.15)					
No.	Time	Paper ID	Title	Authors	Affiliation	
1	15.15 - 15.30	SIM-009	The Effect of water cement ratio on Fresh, Hardened, and Microstructure of Self- Compacting Concrete with Rice Husk Ash	Saloma, Hanafiah, and Victor	Civil Engineering Department, Faculty of Engineering, Sriwijaya University	
2	15.30 - 15.45	SIM-010	Characteristics of Foamed Concrete Utilizing Rice Husk Ash with Foam Percentage Variation	Saloma, Hanafiah, and Tiara Maelta Amanda	Civil Engineering Department, Faculty of Engineering, Sriwijaya University	
3	15.45 - 16.00	SIM-011	Effect of Ratio Sand Aggregate and Dosage of Admixture on High Strength Concrete Properties	Mukhlis Sunarso, Gambiro Soeprapto and Ferryandy Murdono	Senior Researcher, PT Wijaya Karya Beton, Tbk, Bekasi 17411, Indonesia	
4	16.00 - 16.15	SIM-012	Development of Rubberized Asphalt By Using Liquid And Solid Natural Rubber	Yusep Firdaus, Ronny Yohaness, R. Anwar Yamini, R.A. Sri Martini	Pusjatan, Jl. AH. Nasution No. 264 Bandung	
5	16.15 - 16.30	SIM-013	Warm Mix of Asbuton Modified Asphalt with Beewax-base Additive	Tedi Santo Sofyan, R Anwar Yamin, Imam Aschuri, R.A Sri Martini	Pusjatan, Jl. AH. Nasution No. 264 Bandung	
6	16.30 - 16.45	SIM-014	Properties of Polymer Concrete Containing Active Micro Filler of Palm Oil Fuel Ash	Nur Hafizah A. Khalid, Abdul Rahman Mohd.Sam, Azman Mohamed, Nor Hasanah Abdul Shukor Lim and Nur farhayu Ariffin	Faculty of Civil Engineering, Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor	
7	16.45 - 17.00	SIM-015	The Utilization of Industrial Waste as Aggregate Admixture in the Making of Concrete	Siti Ulfah, Meassa Monikha Sari, and Dessy Triana	Department of Civil Engineering, Faculty of Engineering, Universitas Serang Raya	
8	17.00 - 17.15	SIM-016	The Behavior of Self-Compacting Concrete (SCC) with Bagasse Ash	Hanafiah, Saloma, and Putri Nurul Kusuma W	Civil Engineering Department, Faculty of Engineering, Sriwijaya University	



(SIM-001) Behavior of Bagasse Ash-Calcium Carbide Residue Stabilized Soil with Fiber Inclusion

John Tri Hatmoko^{*} and Hendra Suryadharma

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Bagasse ash is a non-cohesive material having small specific gravity that is relatively smaller than that of normal soil, and it behaves as pozzolanic material .Whereas calcium carbide residue (CCR) is also hazardous waste materials containing high calcium. Research about using of bagasse ash and CCR is continually in progress. In this paper, a series of experimental studies was undertaken to study the individual and combined effects of randomly oriented fiber inclusions and bagasse ash-CCR stabilized soil. The first step was carried out compaction test on 7, 14, 21, and 28 and 36 dayscured soil- mixed with 8% CCR to get optimum curing period that was found at 28 days. Then, the test of soil+8%CCR + bagasse ash with proportion of 3, 6, 9 and 12% was performed on unconfined compression test to get the best proportion of bagasses ash that was found 9%. Finally, compaction, direct shear, and unconfined compression tests were performed on 2% fiber inclusion on bagasse ash- CCR stabilized soil (soil +8%CCR+9% bagasse ash). MDD and OMC of soil is not significantly affected by the fiber inclusion. Shear strength and ductility of bagasse ash- CCR soil mixture, however, were dramatically increased due to the present of fiber that could be seen on unconfined compression tests.

(SIM-002) Preliminary Experimental Study of Making Geopolymer Paste as Passive Fire Protection System

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A decrease in the elastic modulus and yield strength due to the creep process is the changes contained in the material that is burning. One strategy to counter this through passive fire protection systems. The system is built into the structure to control the fire by using building materials and does not require any special operations in the event of a fire. This study is a report on a new study of passive fire protection systems. This research report contains a preliminary study of the manufacture of fireproof new materials from industrial waste that is economical and environmentally friendly. Manufacture of new materials are made to overcome deficiencies in fire-resistant material that exists today. The purpose of this study is to analyze experimental factors, which are influence the making of experimental new fireproof material that is smart and innovative materials for civil engineering. Geopolimerization method that is used in this study comes from development of brick manufacturing method as one of the fire-resistant material that exists today. The main results of this study are the major factors that influence the making of pasta geopolymer as passive fire protective. The discussion will be related to the elements of determinant manufacture of fire-resistant geopolymer paste. Conclusion is factors that supporting the manufacture of new fire-resistant material with geopolymer method.

(SIM-003) Mechanical Properties of Concrete Containing 100% Recycled Homogeneous Ceramic Aggregates

Nor Hasanah Abdul ShukorLim¹, Mostafa Samadi^{1, 2}, Nur Farhayu Ariffin², Hosein Mohammadhosseini¹, Nur Hafizah Abd Khalid¹, and Abdul Rahman Mohd. Sam^{1,*}

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Construction industry contribute up to 70% of the wastes in the worldwide. Consequently, utilizing recycled aggregates which do not have negative effect on the properties of concrete help to reduce presser on environment and reduce depletion of natural resources. Depends on the grade, mix design and application of the concrete 65 to 85% of the concrete is consist of aggregates. In this experimental work focuses on replacing 100 % of natural aggregates by recycled fine and coarse aggregates from homogenous ceramic tile waste. Effect of this replacement on mechanical properties of concrete specimens such as compressive strength and flexural strength was investigated. The specimens were cast in 100 x 100 x 100 mm cube for compressive strength test and 100x100x500 mm size for flexural strength test. At the age of 28 days, the compressive strength of specimen containing 100% recycled aggregates was found reach to 97% of control specimen which is quite like control specimen.



(SIM-013) Warm Mix of Asbuton Modified Asphalt With Beewax-base Additive

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 ³Universitas Muhammadiyah Palembang, Indonesia
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Environmentally friendly technologies and energy saving have been developed in various types of industries to respond environmental issues, especially global warming. In the pavement construction industry, the use of Hot Mix Asphalt (HMA) is one important issue that contributes increasing of global warming, especially HMA that uses modified asphalt such as asbuton modified asphalt where its mixing and compacting temperature were higher than conventional HMA. Warm Mix Asphalt (WMA) is one of the technologies of pavement that was developed to address the issue of global warming. Many attempts have been made globally to produce WMA with performance equivalent to HMA but produced at a lower temperature of 20°C - 40°C. Various additives technology has created, produced and has been used for WMA globally. From a variety of wax-based additives available in the market, none of which use the natural wax as a main ingredient. One type of natural wax is beeswax. This study aims to know potential use of beeswax as an additive in producing of WMA mixture with asbuton modified asphalt as a binder. This study hypothesized that beeswax is a natural additive that can be used to produce WMA mixture. A series of laboratory tests on the properties of asphalt and asphalt mixture is made to achieve that goal. In this study, 5 variations composition of beeswax and other materials used (combined-beewax-additive) as an additive for asbuton modified asphalt. However, in all variations using 66% of beeswax. From this study it was known that beeswax is a potential natural wax that can be used as the main ingredient additives for asbuton modified asphalt. Addition of combined-beewax-additives is not change the properties of asphalt significantly but in the mixture properties it tend to decrease the Marshall stability, Marshall Quotient, ITSR and modulus. However, the additional of 0.5% combined-beeswaxadditive into asbuton modified asphalt can meet the requirement on General Specification of Bina Marga 2010 3rd Revision with reducing of mixing and compaction temperatures of 30°C and mixture performance equivalent to HMA which used asbuton modified asphalt as a binder and more over has a better fatigue and aging resistance.

(SIM-014) Properties of Polymer Concrete Containing Active Micro Filler of Palm Oil Fuel Ash

Nur Hafizah A. Khalid^{1,*}, Abdul Rahman Mohd.Sam¹, Azman Mohamed¹,Nor Hasanah Abdul Shukor Lim¹, and Nur farhayu Ariffin²

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This paper presents the mechanical properties of polymer concrete (PC) containing active-mobilize micro filler of palm oil fuel ash (POFA). As known fact, the wrong chosen of filler for PC will lead to give poor properties of PC. In this study, the POFA was divided into two types; ground POFA and unground POFA. The fine micro filler of ground POFA was compared with calcium carbonate. While, coarse micro filler of unground POFA was compared with silica sand. Before the micro fillers being to be utilized in PC, the micro fillers were characterized under microstructure examinations; particle size distribution and morphology. Then, the mechanical properties of PC with different micro fillers were investigated under compression, flexural, and splitting tensile test. Further test on the denseness of PCs were carried out under ultra-pulse velocity (UPV) test. From the results, it was found that the PC with ground POFA had superior mechanical properties as compared to others. In conclusion, the ground POFA had active micro filler which functioning to fill the gap and to provide the dense packed structure in PCs

(SIM-015) The Utilizationof Industrial Waste as Aggregate Admixture in the Making of Concrete

Siti Ulfah^{*}, Meassa Monikha Sari, and Dessy Triana

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The industrial waste usually is a toxic and hazardous waste (B3 waste) that has to be discarded or stacked because it could ruin the environment and cause some diseases. In other side it will become a worth thing if it is reused and recycled. Meanwhile, the uses of concrete structure in construction keep rising rapidly, and cause the demand increase of the concrete. The research objectives are to know if industrial waste could be applied in concrete admixture and to obtain its compression strength. In the making of concrete, it used K-250 normal concrete (21.7 MPa) and cube-shaped printed with size of 15 cm x 15 cm x 15 cm. The fine aggregate was substituted by 0%, 10%, 20% and 30% of sandblast waste, then it was compressive tested when it reached 7 days, 14 days, 21 days and 28 days. The result shown that a concrete with 30% sandblast compounding, in age of 28 days, has the highest compressive strength, about 25.26 MPa. It means that addition sandblast waste could be applied in concrete admixture because it produced higher compressive strength than the concrete with no sandblast wasteat the same age of concrete (22.59 MPa) and it could reduce sandblast in the environment.