



CENPRO 17 COMPETITION ABSTRACTS e-Book

"New norms with new ideas"



VIRTUAL

CENPRO17

CIVIL ENGINEERING PROJECT COMPETITION

Organized by :

Department of Civil Engineering, PMU

in collaboration with the Research, Innovation and Commercial Unit

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COMPETITION ABSTRACTS e-Book

"New norms with new ideas"





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Contributions of writing materials

Competition Participants (Students of semester 5 who take the Course
DCC6203 Civil Engineering Project 2) and Supervisor

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FOREWORD: DEPUTY DIRECTOR OF ACADEMIC POLITEKNIK MUKAH



Assalamualaikum Warahmatullahi Wabarakatuh dan
And Greetings,

Thanks to Allah for HIS blessings making this Civil Engineering Project Competition (CENPRO 17) with themed 'New norms with new ideas' a successful. CENPRO 17 that organized by Department of Civil Engineering is a competition that aims to improve information sharing practices as well as disseminate new knowledge among students and lecturers in Department of Civil Engineering at Politeknik Mukah. Apart from that, the competition is also committed to disseminating new findings in research and product

development. By following this program, Diploma in Civil Engineering students who follow the course DCC6203 / Civil Engineering Project 2 can exhibit projects that have been produced to be evaluated by a competition panel consisting of experts from the industry who are qualified in civil engineering. In addition, this program can produce innovative and more confident students. One of the methods of collaboration that can be carried out with the industry is to involve them directly in the teaching and learning process as educators. When individuals with extensive experience and high knowledge in a related field of work give lectures or talks, students can indirectly be exposed to the realities that occur in the industry or the world of work. I am convinced that research requires meticulous attention, commitment and discipline to ensure quality of results and findings gained met the standards. For that efforts, I congratulate the researchers and presenters involved. Thus, CENPRO 17 serves as platforms for brilliant researchers to showcase the new findings with academicians and students.

This abstract book aims to provide an integrated reference student guide improve information sharing practices as well as disseminate new knowledge among students and lecturers in Department of Civil Engineering. Here for your reference, I encourage you to read it thoroughly so you will be well-prepared for your time here.

In conclusion, I hope this abstract book could be the shifting point for these brilliant researchers to give more impacts in the future Research and Development (R&D) fields.

Thank you, Warmest regards,
Mohd Sani Bin Said
Deputy Director of Academics
Politeknik Mukah

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LIST OF INDUSTRY EVALUATION PANELS

| NO | PANEL NAME | POSITIONS AND INSTITUTIONS |
|----|---|--|
| 1 | TS. SATWANT SINGH A/L SARAWAN SINGH | CIVIL ENGINEER, PEJABAT WILAYAH UTARA JKR SARAWAK |
| 2 | TOH CHEE LEONG | CIVIL ENGINEER, JKR SARIKEI, SARAWAK |
| 3 | IR. NORDIN BIN AHMAD | CIVIL ENGINEER, PERUNDING SSE |
| 4 | MOHD HAFIZ BIN ABDULLAH | CIVIL ENGINEER, JKR NEGERI KELANTAN |
| 5 | TS. NORSHAKINA BINTI SAMSUDDIN | CIVIL ENGINEER J41, JKR JOHOR |
| 6 | NURUL SYIFAA' BINTI AHMAD | CIVIL ENGINEER J44, BAHAGIAN PENGURUSAN PORTFOLIO |
| 7 | MOHD YUSRI BIN ABDULLAH | PROJECT MANAGER, SINLEXON CONSTRUCTION AND DECORATION SDN. BHD. |
| 8 | AGILARAJAN SELVARAJAH | SENIOR ENGINEER, RANHILL CONSULTING (SARAWAK) SDN BHD |
| 9 | AWANGKU FAKRULNIZAM BIN HAJI AWANG MADOHI | CIVIL ENGINEER, JKR BAHAGIAN MUKAH |
| 10 | NORISHAM MOHAMED ALI | GENERAL MANAGER, KGJ |
| 11 | TS. DR. ERITA MAZWAN BINTI MAZLAN | CIVIL ENGINEER LECTURER, PPPT DH48, POLITEKNIK MELAKA |
| 12 | NURUL FADZRIN BINTI RUSLAN | FACILITIES EXECUTIVE, MAJU TMS SDN BHD |
| 13 | MOHD NAZREEN BIN SAFIE | ASSISTANT ENGINEER, LEMBAGA URUS AIR SELANGOR |
| 14 | WROHAYU BINTI OTHMAN | CIVIL ENGINEER, JKR BINTULU DIVISIONAL OFFICE |
| 15 | MUHAMMAD BIN ASMADI | CIVIL ENGINEER, PROJECT DEVELOPMENT DIVISION, BINTULU DEVELOPMENT AUTHORITY |
| 16 | AWANG FIRHAN BIN AWANG AHMAD | OPERATION/MAINTENANCE ENGINEER, SARAWAK SHELL BERHAD |

LIST OF GROUPS EVALUATED BY THE PANEL INDUSTRY

| NO | PANEL NAME | EVALUATED GROUP | | | | | TOTAL OF GROUP |
|----|---|-----------------|------|------|------|------|----------------------|
| | | 1 | 2 | 3 | 4 | 5 | |
| 1 | Ts. SATWANT SINGH A/L SARAWAN SINGH | CP01 | CP05 | CP15 | CP17 | CP10 | 5 |
| 2 | TOH CHEE LEONG | CP06 | CP02 | CP07 | CP11 | CP19 | 5 |
| 3 | IR. NORDIN BIN AHMAD | CP11 | CP07 | CP03 | CP13 | CP18 | 5 |
| 4 | MOHD HAFIZ BIN ABDULLAH | CP16 | CP12 | CP08 | CP04 | CP02 | 5 |
| 5 | TS. NORSHAKINA BINTI SAMSUDDIN | CP12 | CP17 | CP13 | CP09 | CP05 | 5 |
| 6 | NURUL SYIFAA' BINTI AHMAD | CP20 | CP01 | CP18 | CP14 | CP10 | 5 |
| 7 | MOHD YUSRI BIN ABDULLAH | CP17 | CP12 | CP08 | CP19 | CP15 | 5 |
| 8 | AGILARAJAN SELVARAJAH | CP13 | CP16 | CP07 | CP03 | CP20 | 5 |
| 9 | AWANGKU FAKRULNIZAM BIN HAJI AWANG MADOH | CP18 | CP06 | CP04 | CP14 | CP01 | 5 |
| 10 | NORISHAM MOHAMED ALI | CP11 | CP03 | CP09 | CP02 | CP06 | 5 |
| 11 | TS. DR. ERITA MAZWAN BINTI MAZLAN | CP06 | CP19 | CP05 | CP07 | CP14 | 5 |
| 12 | NURUL FADZRIN BINTI RUSLAN | CP20 | CP04 | CP08 | CP12 | CP16 | 5 |
| 13 | MOHD NAZREEN BIN SAFIE | CP05 | CP09 | CP13 | CP17 | CP10 | 5 |
| 14 | WROHAYU BINTI OTHMAN | CP10 | CP14 | CP18 | CP09 | CP01 | 5 |
| 15 | MUHAMMAD BIN ASMADI | CP15 | CP19 | CP16 | CP02 | CP11 | 5 |
| 16 | AWANG FIRHAN BIN AWANG AHMAD | CP20 | CP03 | CP08 | CP04 | CP15 | 5 |

LIST OF PRODUCT CATEGORY COMPETITIONS

| CODE | COMPETITION PARTICIPANT | TITLE | URL |
|------|--|------------------------------------|---|
| CP01 | AHMAD SHAHRIL MOHAMAD, MOHAMAD IZZAT BIN MOHAMAD, NUR ASHYIRA NABILA BINTI NORIZZAN, STANLEY SAIT ANAK CHIKU | MI MODERNIZED TABCHA | https://www.youtube.com/watch?app=desktop&v=H9wwM4eFR_E&feature=youtu.be |
| CP03 | MOHD RIZAL BIN KHATIB, MOHD SYAHRUL IKHMAL BIN EIRWAN, ANSLEM ANAK STEPHEN, RODZIAH BINTI KADIR | FLEXIBLE CHAIR (3 IN 1 CHAIR) | https://www.youtube.com/watch?app=desktop&v=dnFRbNEt69s&feature=youtu.be |
| CP04 | JOHARI BIN KUSAI, NELVIN ANYI WAN, NUR SYUHADA BINTI HARU, MEDALIN MINAH ANAK BANDANG | MOTORIZED WHEELBARROW | https://www.youtube.com/watch?app=desktop&v=OYR4eY7CUZU&feature=youtu.be |
| CP06 | SAFHIFUL RABBI BIN MUHAMAD NOOR, JALIOS ANAK JAWING, STEPHEN ELLAI ANAK MENDIT, GILBERT GILTAM ANAK DAVIDSON | BATA HAMPAS PADI | https://www.youtube.com/watch?app=desktop&v=ddGVt1xFZUM&feature=youtu.be |
| CP07 | SAFHIFUL RABBI BIN MUHAMAD NOOR, AEMA ANAK JAMBA, ANDYSON TAWIE ANAK RUSKIN KIONG, MUHAMMAD FAED MUAZZIN BIN ABDUL AZIZ | PORTABLE FORMWORK | https://www.youtube.com/watch?app=desktop&v=du0YlRenKjY&feature=youtu.be |
| CP08 | RAHAYU BINTI ALI, MARIANA ANAK PANA, MONICA IVIANA ANAK EDWIN IMAM, NELSON MELIU ANAK MAGA | PERANGKAP MINYAK HAMPAS TEBU | https://www.youtube.com/watch?app=desktop&v=EDvcTwgmDw&feature=youtu.be |

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LIST OF PRODUCT CATEGORY COMPETITIONS

| CODE | COMPETITION PARTICIPANT | TITLE | URL |
|------|---|---|---|
| CP09 | NORINI BINTI SHAMSSUDIN, SOFEA JAWAWI, ANATASIA RACHA ANAK UNJI, FADHIL IKHWAN BIN MOHAMAD HASWANDI | COMFORTABLE WATER FILTER | https://www.youtube.com/watch?app=desktop&v=Qhn2Egc65KM&feature=youtu.be |
| CP10 | SANMASTRI BINTI SANUSI, ABG FARHANNASSAR B ABG SARKAWI, MARX KEITH WILLIAM RUTH, MAUREEN STEPHEN | KAJIAN MENGHASILKAN PREMIX MENGUNAKAN BAHAN SISA PLASTIK (LDPE) SEBAGAI CAMPURAN | https://www.youtube.com/watch?v=zOiKODon0ss |
| CP11 | NORHAFIZAH BINTI ISMAIL, PAULYN INJAR ANAK UNONG AISYAH BINTI ASHKAR NURUL AYUNNI BINTI AZIS | PENGGUNAAN BAHAN PLASTIK KITAR SEMULA DALAM BLOK KONKRIT | https://www.youtube.com/watch?app=desktop&v=BceCjc4z4sw&feature=youtu.be |
| CP12 | SANMASTRI BINTI SANUSI, SHIRLEY CHEMENDA AK ENDU, DAYANG NUR FARZILAH BINTI ABANG JUNID, SCARLETT KIJAN HUMPRY | KAJIAN PENGGUNAAN PLASTIK SEBAGAI BAHAN GANTI SIMEN DALAM PENGHASILAN 'PAVER BLOCK' | https://www.youtube.com/watch?app=desktop&v=QVE RkcHog6I&feature=youtu.be |
| CP13 | NORSIDA BINTI MORSIDI, MARCELLINUS ANAK VINCENT, JOSLEE BIN WATI, MUHAMMAD NUR IMAN BIN YUSRI | TAPPING ROD TILE CHECKING AND MARKERS | https://www.youtube.com/watch?app=desktop&v=yXG ynOT8_0&feature=youtu.be |
| CP14 | MOHAMAD FADZLI BIN JAWAWI, MUHD TAUFIQ BIN WAHAB, SYABIL AMZAR BIN AJIS, FRANKENTHERMEN BIN DINIS | KUDA GERGAJI BOLEH LARAS DAN PELBAGAI GUNA | https://www.youtube.com/watch?app=desktop&v=Q-1YjyO8m5o&feature=youtu.be |

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LIST OF PRODUCT CATEGORY COMPETITIONS

| CODE | COMPETITION PARTICIPANT | TITLE | URL |
|------|--|--|---|
| CP16 | SITI ZURAIFA BINTI MD SAH, MOHD. SAFWANIE BIN ABDUL AZISS, OLIVER SANTUK AK EDWARD, MUHAMMAD SYAFIK BIN HAMADI ABDULLAH | 2 IN 1 FUNCTION FLEXIBLE SPRING DELINEATOR | https://www.youtube.com/watch?app=desktop&v=45-NclAwuSc&feature=youtu.be |
| CP17 | MASALINDA BINTI MANSOR, NUR FITRAH BINTI ESA NUR AIN FATIHAH BINTI ISKANDAR MUHAMAD AFIQ IZZAN | KONKRIT PONTOON | https://www.youtube.com/watch?app=desktop&v=7_l6J7zybTA&feature=youtu.be |
| CP18 | AHMAD SHAHRIL MOHAMAD, CARLOSSON IVAN LINGGI ANAK DENNIS UNCHAT, PETE O'NEILL KANCING ANAK PETER, VICTORIA NUJA ANAK SUNNY | MODERN MINIMALIST TABLE | https://www.youtube.com/watch?app=desktop&v=kO1xHPQlads&feature=youtu.be |
| CP19 | DR NURULAINI HAFIZAH BINTI MOHD HAFIR, NOR AFFIKAH BINTI ABDULLAH ABD KADIR ANNE SAM SCHENJOYCCI JAIFANI NURAIN ANASTASIA BINTI ROSLI | GLOW IN THE DARK TILE | https://www.youtube.com/watch?app=desktop&v=2coiU6LATFo&feature=youtu.be |
| CP20 | NIK NUR DINA BINTI NIK AZMI, NURSYAFIRA BINTI MOHD AFIQ, ATIQA BINTI MOHAMAD MORTADA, AIERINNE BINTI MARTIN | BATA PULPA PORTLAND | https://www.youtube.com/watch?app=desktop&v=GtMk5dMEgTA&feature=youtu.be |

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LIST OF RESEARCH CATEGORY COMPETITIONS

| CODE | COMPETITION PARTICIPANT | TITLE | URL |
|------|--|---|---|
| CP02 | MASALINDA BINTI MANSOR, AZDHARI UWIES BIN FAZARIOUS, EMILY ANAK STEPHEN TANANG, BELINDA FURA ANAK EMBA | KAJIAN TERHADAP PEMATUHAN KONSEP BANGUNAN BEBAS HALANGAN DI SK KUALA BALINGIAN | https://www.youtube.com/watch?app=desktop&v=rWr-AdtwTLo&feature=youtu.be |
| CP05 | FAHMI BIN ABD RAZAK, SANDRA LIZZA BANUN AK RECHMAND, SATIN IZZATI BINTI MOHAMAD DAUD, MUHAMMAD RAIES BIN ABDUL RASHID | KAJIAN KEATAS NISBAH BANCUAN KONKRIT RINGAN DENGAN MENGGANTIKAN AGGREGAT KASAR DENGAN "EPE FOAM" | https://www.youtube.com/watch?app=desktop&v=77N20cgMglc&feature=youtu.be |
| CP15 | NORSIDA BINTI MORSIDI, MAXWELL BELUMPONG ANAK ELEN, MECKSON RICKY ANAK LEMIN, MIX DUNSTAN SIBAT ANAK KELAMBU | KAJIAN TERHADAP PERBANDINGAN KEKUATAN FLY ASH TEEHADAP MORTAR | https://www.youtube.com/watch?app=desktop&v=UKK4rquTa2Q&feature=youtu.be |



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PRODUCT ABSTRACT

CP01

Mi-modernized Tabcha

Ahmad Shahril Bin Mohamad Shahudin^{1*}, Nur Ashyira Nabila Binti Norrizan²,
Stanley Sait Anak Chiku³ and Muhamad Izzat Bin Mohamad⁴

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Abstract

Chairs and tables are one of the furniture created to support various human activities such as sitting and eating. Both types of furniture are mostly used in educational institutions are not practical enough so many are not well-used. This indirectly causes a waste of space. Therefore, the researchers implemented this project to test the effectiveness of innovations that apply more practical features than existing chair and table designs. The main objective of this study conducted was to design foldable chairs and tables. The next objective is to produce chairs and tables with a minimalist design concept as well as to minimize the total cost of chairs and tables manufacturing. The scope of this study covers the effectiveness and method of questionnaires conducted to ensure that chairs and tables are created according to the set criteria that are easy to fold, easy to store and do not consume high manufacturing costs. The findings of the study showed that a total of 40 people or 67.8% of the respondents strongly agreed that Mi-Modernized Tabcha can solve the problem of narrow space with foldable function. Not only that, Mi- Modernized Tabcha is also suitable for children and minor uses because the findings of the study showed that a total of 31 people, 52.5% of respondents strongly agree with this matter. Mi-Modernized Tabcha also managed to apply an attractive minimalist design which the findings have shown that a total of 26 people that is 44.1% of respondents strongly agree with the related items. Apart from that, a total of 23 people or 39.0% of the respondents also agreed that this product is just a small improvement from the existing table and chair design. Furthermore, the findings of the study showed that 32 people or 54.2% of respondents strongly agreed that this product can be commercialized more widely and a total of 27 people or 45.8% of respondents agreed that they are interested in owning this product and a total of 21 people or 35.6% of respondents strongly agreed that they need this product because there is no product on the market that can solve the problem of narrow space. Finally, a total of 34 people or 57.6% of respondents strongly agreed that Mi-Modernized Tabcha is suitable for whole society uses other than students' and Mi-Modernized Tabcha is also believed to be sold at a reasonable price because the data has shown that this item is agreed by a total of 33 people or 55.9% 3 respondents while a total of 26 people that is 44.1% respondents strongly agree that this product can solve the problem of high cost of chairs and tables manufacturing. Overall, the results of data analysis and discussion of the study have shown that the researchers' product has achieved the discussed objectives.

Keywords:- final project, folding mechanism, questionnaire, study findings.

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PRODUCT ABSTRACT **CP03**

Multifunction Chair

Mohd Rizal Bin Khatib¹, Anslem Anak Stephen², Rodsiah Binti Kadir³ Dan Mohd Syahrul Ikhmal Bin Eirwan⁴

^{1,2,3,4} Department of Civil Engineering(of Affiliation),

*Corresponding author:

Abstract

Mulfi-function chair is a chair that is innovated form a regular chair. It is a combination of a chair, ironing board, clothes hanger and drawer that is innovated to be able to create a chair with a new shape, this is the first objective of creating this product, which is to be able to design a new chair. The second objective of the creation of this product is to be able to save space to place items especially in a narrow and limited space such as a house that has a narrow space by making this chair as a multi-function chair in order to save space while saving the cost of purchasing other furniture such as ironing boards and clothes hangers. Apart form that, this multi- function chair also has an innovation in the hinges on the ironing board by joining the two hinges into one to make it easier for the ironing board to be folded back and hidden at the back of the chair. This multi-function chair has also been tested by placing a load on it weighing 100kg to test the durability of the chair. Study data were obtained from the distribution of questionnaires through google form. The average respondent agreed with the creation of this chair in line with the set objective. The result of this study chair are suitable to be placed in narrow houses such as terrace houses and flat houses.

Keywords:- multi-purpose chair, questionnaire, study findings



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PRODUCT ABSTRACT **CP04**

Motorized Wheelbarrow

Johari Bin Kusai¹, Nelvin Anyi Wan², Nur Suhada Binti Haru³ And Medalin Minah Anak Bandang⁴

^{1,2,3,4} Department of Civil Engineering(of Affiliation),

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Abstract

The use of wheelbarrows especially in the field of construction is one of the important elements to facilitate construction work. However, the function of the wheelbarrow on the market now uses a manual method where the worker has to lift the handle on the wheelbarrow and carry it elsewhere. In this project, there are three objectives that the researcher has set, namely to design a wheelbarrow using an automatic system known as "Motorized Wheel Barrow". The second objective is to test the effectiveness of the product in terms of time savings. Meanwhile, the third objective of the effectiveness of "Motorized Wheel Barrow" is to transport a load of 150kg. Tests were performed on the "Motorized Wheel Barrow" to determine the accessibility of the objectives. For the first objective the researcher has made a number of designs and suitable designs are selected based on the solution and safety of the user. In terms of time saving, "Motorized Wheel Barrow", managed to save 36% of time transporting loads as far as 3 different distances of 22m, 32m and 42m by carrying the same weight load of 50kg. Meanwhile, in terms of transporting loads, "Motorized Wheel Barrow" is able to accommodate 150kg compared to a regular wheelbarrow because this product has been modified the bottom of the bucket with the addition of metal. Next, to improve the product in the future is to change the engine using a scooter motor engine to get a faster speed. In addition, the use of a lighter and stronger metal on the engine parking structure. And the last suggestion is to improve the bucket section with a hydraulic system to facilitate the lowering of heavy items. Overall, this "Motorized Wheel Barrow" has succeeded in achieving the objectives that have been set.

Keywords: - Motorized Wheel Barrow, Save Time

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PRODUCT ABSTRACT **CP06**

Rice Husk Brick

Safhiful Rabbi Bin Muhammad Noor¹, Stephen Ellai anak Mendit², Jalios anak Jawing³, Gilbert Giltam anak Davidson⁴

^{1,2,3,4} Department of Civil Engineering (of Affiliation),

*Corresponding author:

Abstract

Rice mills produce rice husk ash, which is an organic waste. It can be used with cement to manufacture concrete goods such as concrete bricks as a supplemental cementitious ingredient. RHA produces a fantastic pozzolanic material with microsilica-like characteristics. As a result, employing RHA as a concrete additive has a lot of potential because it gives the concrete a lot of compressive strength. This project uses rice husk to generate rice husk bricks by modifying the brick composition used to make concrete bricks. The aim of this project is to learn how to make rice husk bricks and to describe the composition of the product mix that can be used to make concrete bricks according to the standard. In addition, there are several scopes of the study that have been set in this project, namely the type of brick, the size of the brick that is brick - 100 x 65 x 215 (actual dimensions W x H x L) the average weight of the brick, the materials used and the type of test used. All this is set to solve some problems, namely bricks that easily absorb water and will lose strength and use rice residue to prevent rice husk from being thrown away. The significance of this research is lowering maintenance costs and reducing pollutants. Methodological studies are utilised to plan the project production process for this paddy brick project, which includes employing a flow chart as a guide for production planning and project testing.

Keywords : Rice husk ash , bricks , concrete

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PRODUCT ABSTRACT

CP07

Portable Formwork

Safhiful Rabbi Bin Muhammad Noor¹, Aema anak Jambai², Muhammad Faed Muazzin Bin Abdul Aziz³ and Andyson Tawie anak Ruskin Kiong⁴

^{1,2,3,4} Department of Civil Engineering (of Affiliation),

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³andyson_tawie_ruski@student.pmu.edu.my

Abstract

Portable Formwork made of plywood measuring (2 feet x 6 feet) is specially designed to assist workers on construction sites. As we all know workers have difficulty in installing the mold box i.e., had to take a long time to install. In addition, traditional mold boxes cannot be used many times and usually on average, the use of traditional mold boxes can withstand being used from 1 to 4 times in a building construction and will result in a lot of waste in terms of cost. The purpose of their researcher Portable Formwork is to further facilitate construction work on construction sites. Portable Formwork created by the researcher can ease the construction work because it is easy to fold after using it. In addition, this Portable Formwork is also easy to store and does not require much space. Among the problems faced by workers on construction sites when using traditional mold boxes is that it causes difficulties in achieving high quality on construction sites. More testing and control are needed at the construction site. At the same time, traditional mold boxes that use wood also slow down the installation process as they will need to be reopened and that will slow down the construction process. Through the survey form that the researcher has prepared will be able to help to find out the opinion of the workers who use traditional mold boxes on the construction site and evaluate the Portable Formwork that the researcher has designed. Through the data and studies obtained, the researcher concluded that the built Portable Formwork simplifies the work to install the pole mold box because the study findings show that Portable Formwork compared to traditional mold boxes can be installed easily and save more time. Portable Formwork structure built using plywood can also be processed using steel or iron to be stronger and has a durable structure which allows it to be used repeatedly.

Keywords: Portable Formwork, Mold boxes, Plywood.

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PRODUCT ABSTRACT **CPOB**

Penapis Air Sisa Hampas Tebu

Puan Rahayu Binti Ali¹, Nelson Meliu Anak Maga², Monica Iviana Anak Edwin
Imam³ dan Mariana Anak Pana⁴

^{1,2,3,4} Department of Civil Engineering(of Affiliation),

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Abstract

Discharge of kitchen wastewater directly into the drain causes water pollution and clogged drains. The use of wastewater filters at the outlet is very necessary to overcome the problem. The main objective of this study is to produce wastewater filter products from waste material that is sugarcane waste. This product named Waste Water Filter from Sugar Cane Residue is innovated to help reduce water pollution. The product measuring 530 mm (L) x 410 mm (W) x 325mm (H) is produced using plastic containers that have been modified by adding iron net baskets and sugar cane waste filters that are easy to find and save costs. Laboratory tests were performed to identify the effectiveness of sugarcane waste filters in reducing kitchen wastewater pollution before it is discharged into drains. The tests carried out are pH test, turbidity test and aluminium content test. The experiments were performed for three consecutive days during the peak time of kitchen use i.e. during lunch preparation. Two types of sugarcane waste filter thicknesses, namely 2cm and 3cm were used for each experiment. Wastewater samples were taken before experiments were conducted to determine water quality before being filtered. In general, the pH value after filtration was almost at a neutral level compared to before filtration 7.9. The turbidity test also showed a decrease. While the aluminium test before 0.45 filtration decreased at 0.11 and 0.22 at 2 cm and 3 cm sugar cane residue thicknesses meeting the drinking water quality standard requirement of 0.2 mg /l. With reference to the nine parameters that have been taken for water quality, the entire dirty water filtered using sugar cane waste effectively helps reduce water pollution.

Keywords— Wastewater Filters; Sugarcane Waste; Water Quality; Water Pollution.

"New norms with new ideas"

PRODUCT ABSTRACT **CP09**

Comfortable Water Filter

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Abstract

Nowadays many sizes and types of water bottles are on the market. Each type of water bottle uses different plastic materials that have their respective advantages. Most bottled water bottles in the market will certainly meet the requirements and provide a function that satisfies the consumer. In this study, the most important objective emphasizes the design of Acrylic mobile water bottles that are easily carried and used everywhere by consumers. The design will be more focused on the moderate size to be comfortable and meet the user's taste. In addition, the product also meets the second objective of the product that analyzes bottles of bottles that are capable of meeting the needs and needs of consumers. Subsequently the third objective of the test conducted on the product reinforces the first object in which the test performed means good and satisfactory results. This test is done to see if the products that have been produced are able to meet the consumer's taste and meet the objectives of the study, designing the acrylic based water bottle. The test to be done to prove the product's success is the leakage test through the bottle cover. This test is done by ensuring that the resulting product does not fail. For example, make sure the product is not leaked and comfortable is used by the user. Additionally, testing on product balance is also done to ensure that the product has a good balance and is easy to hold and be placed on a place.

Keywords: Design, leakage test through bottle cover, size

"New norms with new ideas"

PRODUCT ABSTRACT

CP10

Kajian Menghasilkan Premix Menggunakan Bahan Sisa Plastik (LDPE) Sebagai Campuran

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Abstract

Bitumen is one of the important elements in road construction to bind the mixture in the premix. Yet considerable costs have been incurred in traditional road construction. In this project, there are 2 objectives, namely, to determine the appropriate plastic percentage ratio for the premix mixture. While the next objective is to test the level of bond strength of a mixture of bitumen and plastic. According to the data we obtained, the mixture of bitumen with 75% plastic is 14.30kn while the 0% plastic is 12.12 kn. We found a plastic mixture of 75% suitable for use for future road construction.

Keywords: Bitumen, Plastic, Premix

"New norms with new ideas"

PRODUCT ABSTRACT

CP11

Penggunaan Sisa Plastik Jenis Polypropylene (PP) Sebagai Bahan Tambah Dalam Penghasilan Blok Konkrit Ringan

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Abstract

Plastic is second highest type of waste and it is non-biodegradable, taking hundreds of years to breakdown. This will causes issues with waste disposal because plastic will be required to be burned, then releasing toxic gasses into the atmosphere and polluting the ecosystem. To solve this issue, this research implemented recycled polypropylene (PP) type plastic as an additive in the manufacture of lightweight concrete. The objective of the research was to determine the ratio of the lightweight concrete mix with the plastic additions Polypropylene (PP) whose density and compressive strength have been assessed. Different polypropylene (PP) plastic compositions, namely 0.5%, 1.0% and 1.5% were applied to each sample in this research. The density data are calculated using the density formula, which is the mass of the object divided by the volume of the object, and the density obtained is 1732 kg/m³, 1645 kg/m³, and 1448 kg/m³, recorded by polypropylene plastic composition (PP) at 0.5%, 1.0 %, and 1.5 % respectively. Each sample will be tested with a cube test based on BS EN 12390-3, 2009: Compressive strength of test specimens to obtain compressive strength data. The results of the compressive strength data obtained on the 7th day revealed that the 0.5% composition recorded the lowest result of 10.8 Mpa, followed by the 1.0% composition with a compressive strength of 13.4 Mpa, and the highest recorded was 13.5 Mpa at the 1.5% composition. As a result, a sample with a polypropylene (PP) plastic composition of 1.5 % was chosen as the most suitable and ideal ratio to be used as a production casting because it has the lowest density and the highest compressive strength, which means it can bear more load than other samples with low weight (low density). Despite the fact that the test data is restricted to the 7th day, all of these samples may still be utilised as masonry units because their compressive strength has met minimum criteria of 5 Mpa. In conclusion, the objective of the research is achieved because each sample can be determined its density and compressive strength. As a result of the whole study, the use of polypropylene (PP) plastic was seen to provide low density and high compressive strength on the optimal composition of polypropylene (PP) plastic.

Keywords:- lightweight concrete, additive, polypropylene plastic, density, compressive strength

"New norms with new ideas"

PRODUCT ABSTRACT **CP12**

The Use Of Plastic As A Substitute For Cement In The Production Of Paving Blocks

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Abstract

Used plastic is one of the largest and most problematic wastes in our country Malaysia. Without a systematic disposal system, used plastic will end up being dumped arbitrarily everywhere and creating mosquito breeding grounds and open burning problems. Paving blocks are widely used in building construction, road pavement and other uses. The purpose of this study was to produce paving blocks from plastic and sand, study the compressive strength of paving blocks and study the water infiltration rate. The materials used are sand and plastic. The plastic used for this study is thermoplastic which is polythene which consists of plastic bottles and plastic bags. The sample size of the mold box for the test sample is 50mm x 50mm x 50mm. The percentages used were 70% plastic 30% sand and 40% plastic 60% sand. A total of 6 samples of paving block cubes were prepared consisting of 3 cubes for the percentage of 70% plastic 30% sand and 3 cubes for the percentage of 40% plastic 60% sand with the aim of 1 sample from each percentage to be tested on the 7th, 14th and 28th day. From the tests conducted, the best data for compressive strength using 70% plastic is on the 7th day which is 19.3 MN/m². While for the use of 40% plastic, the best data is on the 7th day which is 10.01. The entire sample is following the set standards and has a low water infiltration rate value. However, the highest value recorded was from the 28th day sample using a percentage of 40% plastic which has a water permeability rate of 17.13 MN/m²

Keywords – Paving block, Plastic

"New norms with new ideas"

PRODUCT ABSTRACT

CP13

Tapping Rod Tile Checking & Markers

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Abstract

Tapping rod checker and marker is an innovative product for use in the inspection of tile installation works on buildings. The objective used in this innovative study is to design a tapping rod checker and marker so that it is easy to use during the inspection process. In addition, the second and third objectives are to obtain the workability of Tapping rod checker and marker in terms of time saving rate and identify consumer perceptions of this product. The method used to achieve the objectives of the study is to design tools, make tests and questionnaires. The testing process was conducted on 3 users to perform tile inspection with existing tools and tapping rod checker and marker in terms of time saving rate. Meanwhile, the researcher also conducted a questionnaire to 12 users by filling in the questionnaire through the Google Form application. The findings show that the time saving rate is 1.237 seconds. of the respondents. this shows with the help of tapping rod checker and marker can speed up the process of checking the tiles in the building. Meanwhile, consumer perception of this product is positive. Overall, this tapping rod checker and marker can be highlighted as an innovation product for use in the field of civil engineering.

Keywords: - final project, adjustable tapping rod tile, questionnaire



"New norms with new ideas"

PRODUCT ABSTRACT

CP14

Kuda-Kuda Gergaji Boleh Laras Dan Pelbagai Guna

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Abstract

Sawhorse are a woodwork that has been innovated into two functions to the user, namely as a place for woodcutters and work desks to save space in a place. It is very suitable as a worktable. The main objectives of this study were to produce a multifunctional product, identify the ideal design for sawhorse, and test the differences of existing sawhorse with new ones. The scope of this study covers on comfort, neatness and effectiveness to ensure that the manufacture of the table can follow the set criteria that is comfortable, safe for all users, and effective to function as two pieces of furniture in one product. In addition, this study includes a literature review, collection of information from questionnaires, analysis of information obtained and finally the writing of a research report. Based on the results obtained, space problems are often faced by users. The previous table arrangement will be focused on only one position to avoid wastage of space. Data obtained from questionnaires and analytical studies using the Statistical Package for Social Science (SPSS) and the average response from the scale of 'strongly agree' on the questionnaires that were distributed to respondents got a high percentage. Overall, the results of data analysis as well as the discussion of the study have shown that the researcher's innovation has achieved the objectives that have been discussed. This is said to be so because a total of 33 respondents (57.9%) strongly agreed that the state function products are good and effective. Respondents also gave a satisfactory feedback that 33 respondents (57.9%) strongly agreed that the design is in good condition and makes it easier for users of the product to move to another place. 33 respondents (54.4%) strongly agreed that the advantages of the product could help in the daily lives of consumers. Next, the purpose of this sawhorse is built to make it easier for the user to make movements. As a result of the design of these saw horses, it can reduce the problem of user movement, especially in narrow or less comfortable places.

Keywords: - Saw horses, questionnaires, research findings

"New norms with new ideas"

PRODUCT ABSTRACT

CP16

2 In 1 Function Flexible Spring Delineator

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Abstract

Improving road safety is the main agenda of our country to reduce the rate of road accidents. Therefore, providing traffic control devices for safety is very important. In addition, we often hear that poor traffic control devices can cause unexpected accidents. So the main objective of the study is to produce a traffic control device type guide pole (Delineator) made from recycled material and can be placed on premix-paved surfaces and ground surfaces. Accordingly, a survey using the questionnaire method was conducted on 50 respondents comprising residents of the housing area in Bintulu, Sarawak. The main focus of the questionnaire for this study is to make an assessment on the quality aspects of the material and safety. Based on the results from the questionnaires analyzed using the Social Science Bulk Statistics System (SPSS) program, it was found that the Alpha Cronch value obtained is (0.85). It show that this product has high validity and reliability and has a variety of dimensions to be used to test the effectiveness of this study. Finally, for future study improvement proposals, tests on the materials used should be conducted so that we can be aware of the durability of the materials we use to produce the project.

Keywords: - Road Safety, Traffic control devices, accidents, Survey and Questionnaire



"New norms with new ideas"

PRODUCT ABSTRACT **CP17**

Konkrit Pontoon

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Abstract

Floating jetties is highly demanded for areas where the main economic income is from marine resources. The innovation of concrete pontoon using styrofoam as an add-on, expected to help solving the issue raise in the problem statement, moreover it is also reduce environmental pollution. Concrete pontoon size is 500 mm x 500 mm x 100 mm thick, produced using styrofoam as an add-on. The concrete mixture produced, able to float on water surface. The ratios used are 1: 2: 0.02, 1: 2: 0.03 and 1: 2: 0.04 (Cement : Sand : Styrofoam). Basically, there are three type of test conducted, which is strength test, buoyancy test and water absorption test. Data obtained are compared against MS 7.6: 1972 / British Standard BS 3921: 1985. As a result, ratio number two which is 1: 2: 0.03 achieves the study's objective. This is based on data collected on strenght rate, water absorption rate and its ability to float on water surface is better than the other ratios. This innovation is a steps towards sustainability. Pollution able to be reduced by reusing styrofoam, that is difficult to decompose through the current disposal system commonly use in our country.

Keywords: concrete pontoon, styrofoam, sustainability



"New norms with new ideas"

PRODUCT ABSTRACT CP18

Modern Minimalist Table

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Abstract

Tables and shelves are furniture in the form of flat surfaces supported by several legs. Both of these pieces of furniture are often used to place and store items with a certain height so that they are easy to reach. This furniture is often provided in every institution as a basic convenience of users. But on the other hand, the second design of the existing furniture does not meet the comfort and safety of users. This has led to consumer dissatisfaction with the design of furniture. As a solution, researchers have carried out a project to produce a piece of furniture that has one function as a table and shelves at once. The main objective of this study is to design furniture that is minimalist and ensure that the furniture can function well, which is able to withstand the load on it as well as can produce furniture that saves space. The scope of this study involves the process of collecting data and information regarding the use of tables and shelves according to the set criteria that is minimalist, neat and safe to use. Data obtained from the questionnaires and studies were analyzed using the Statistical Package for Social Science (SPSS) and the average response from the scale of 'strongly agree' on the questionnaires that were distributed to respondents got a high percentage rate. Overall, the results of data analysis and discussion of the study have shown that the researcher's innovation has achieved the objectives that have been discussed. This is said so because a total of 35 respondents (54.7%) strongly agreed that the product can work well and effectively. Respondents also gave a fairly satisfactory feedback that a total of 30 respondents (46.9%) strongly agreed that the wheels added to the product make it easier for users of the product to be moved from one place to another. A total of 33 respondents (51.6%) strongly agreed that both functions of the product can help in the daily life of the consumer.

Keywords: - minimalist table, function well, analysis and study findings

"New norms with new ideas"

PRODUCT ABSTRACT CP19

Eggshell As A Partial Replacement Of Fine Aggregate In Glow In The Dark Cement Tile (GITD Tile)

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Abstract

Nowadays, industrial development in the construction industry is becoming more widespread. Therefore, an alternative to overcome the growing demand for raw materials in the construction industry such as sand is to use waste materials as mixing materials. Therefore, a study with the method of using eggshell as a mixing material in concrete tile mix was conducted. In this study, the suitability of eggshells to replace part of the sand in the cement mix was studied with the aim of determining the compressive strength and water absorption. The ratio used in the mix is 1: 1 1/2: 3 (cement: sand: eggshell). Samples of the cement tile mixture were cured with water and tested at the age of 7 and 28 days. As a result of the laboratory experiments performed, the compressive strength of the cube samples passed the standard specifications of BS EN 1881 Part 116: 1983 and ASTM C39/C39M with a reading value of 6.0 MPa on the 28th day for exceeding the minimum requirement of 5.0 MPa on the 28th day. The value for percentage of water absorption is also at a good level because the reading value is less than 3% where the value of water infiltration percentage on the 28th day is 2.60% and has exceeded the specifications and standards set out in BS 1881 Part 122: 1983 and ASTM C1585. As for the density of concrete samples, the reading value exceeds the standard specifications stated in BS 1881 Part 114: 1983 and ASTM C138M-17a where the specification of a good density value is between 1500 kg/m³ to 2000 kg/m³ with a reading of 1699.7 kg/m³. Thus, the use of eggshells in concrete tile mixes can be used.

Keywords:- eggshell, study findings, compressive strength, water permeability.



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PRODUCT ABSTRACT CP20

Bata Pulpa Portland

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Abstract

Bata Pulpa Portland is a study using waste materials derived from wood pulp. This study was to identify the influence of wood pulp as a substitute material in cement mixes. This study was also conducted to determine the level of compressive strength of bricks, water absorption rate and density of cement mixture mixed with wood pulp. The use of a quantity of wood pulp material in the cement mix should be taken into account to ensure that the strength of Bata Pulpa Portland can reach the standard of brick strength. The mechanical properties of water -absorbent wood pulp can be solved by the use of aluminum sulfate and calcium chloride in the Bata Pulpa Portland manufacturing mix. In this study, bricks measuring 215 mm x 102.5 mm x 65 mm resembling cement bricks were produced to test the influence of cement mixture with wood pulp. Three mix design ratios were used and samples were tested at ages 7, 14 and 28 days. The results of the study found that the mixture ratio of 3 which is 1: 6: 2 gave the best results compared to other samples with a compressive strength value of 6.9 N/mm² with a density of 1431.1 kg/m³ and 7.4 % water absorption. These bricks are also recognized as lightweight suitable for use as panel walls or constructions that do not bear a large load for the interior construction of buildings. This study on Bata Pulpa Portland needs to be studied in more depth to make Bata Pulpa Portland an IBS brick.

Keywords: Bata Pulpa Portland, Wood Pulp, Calcium Chloride, Aluminum Sulfate

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RESEARCH ABSTRACT

CPO2

Kajian Terhadap Pematuhan Konsep Bangunan Bebas Halangan Di Sk Kuala Balingian

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Abstract

Physical disability whether permanent or temporary may happen to any individual. Building is a facility often visited by anyone. Therefore, public buildings should be accessible and should be barrier-free to facilitate those with disabilities. Based on readings and observations it was found that people with disabilities has difficulties to move freely without assistance in most public buildings. A study was conducted on Sekolah Kebangsaan Kuala Balingian. The study carried out to determine barrier-free building compliance with the Act 685 of the Persons with Disabilities Act (OKU), Malaysia Standard 1884: 2014 and the Guidelines for Planning Standards for Facilities for Disabled. The study shows that some of an existing facilities do not comply with the standards. In addition, there are few facilities that is unavailable as stated in Act 685 of the Persons with Disabilities Act (OKU). The recommended improvement is to create facilities for the disabled such as disabled parking, disabled toilets, and special dressing room space in line with Malaysia Standard 1184: 2014. The results of this study are expected to help the Ministry of Education Malaysia to plan their expenditure for improvement of facilities related to the needs of people with disabilities in the school.

Keywords: obstacle-free building, convenience facilities, disabled people, public building.



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RESEARCH ABSTRACT **CPOS**

Kajian Keatas Nisbah Bancuhan Konkrit Ringan Dengan Menggantikan Aggregat Kasar Dengan "Epe Foam"

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Abstract

The aim of this study is to study lightweight concrete by replacing coarse aggregate with Epe Foam. Epe Foam is a material that is used to cover or wrap up electrical goods and has lightweight properties. Heavy coarse aggregates in old concrete mixtures will be lighter after being replaced with Epe Foam. Therefore, the study of lightweight concrete production by using Epe Foam as a replacement material is expected to solve the problems of study conducted, while reducing environmental pollution. Another purpose of this study is also to obtain the best ratio for lightweight concrete with Epe Foam. Meanwhile, *the tests that have* been used for this study is the compressive strength test and water absorption rate test.

This study has also given a good ratio in producing lightweight concrete with EPE Foam. All of the data obtained are based on standardized tests (MS 7.6: 1972 / British Standard BS3921: 1985). Based on the simulation conducted, it is found that the ratio of 1: 2: 4 has fulfilled the objective of the study that researches have achieved a good compression value of 18MPa and has a water permeation rate of 6%. Therefore, the compressive strength has reached the strength value of lightweight concrete of 16kN to 18kN and for the water permeability rate, it has reached the absorption value of 6% to 8%. This resulted to relatively good ratios for Epe Foam in producing lightweight concrete. This conducted study is one of the steps towards sustainability. Pollution can be reduced by reusing Epe Foam material which is difficult to decompose through the disposal system that is commonly carried out in our country.

Keywords: lightweight concrete, mixture ratio, compressive strength, water absorption, additives, 'Epe Foam'.

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RESEARCH ABSTRACT **CP15**

Kajian Terhadap Perbandingan Kekuatan Fly Ash Terhadap Mortar

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Abstract

The title of this study is a study on the comparison of the strength of fly ash as a mortar. Various researches are conducted using fly ash as an additive in concrete. The advantage of fly ash is that it has high compressive strength. In this study, the researcher conducted a comparison of 2 studies that used fly ash in concrete mixture. The scope of this study focuses on the comparison of the strength of mortar mixed with fly ash additives and determines the best ratio through the results of previous studies. While the methodology carried out is the selection of a systematic research guide "Meta Analysis" that is PRISMA has been selected to produce a research paper. Researchers chose the study of the strength of mortar mixed with fly ash (Agus Maryoto, 2008) and the strength of brick and mortar mixed with fly ash (Trisna Soenara and Ngurah Ardha, 2010) as data sources to conduct a comparison of compressive strength obtained from fly ash. The findings of the analysis obtained show that the rate of increase in strength for the study is through the study of the strength of mortar mixed with fly ash (Agus Maryoto, 2008). The best ratio produced was through the ratio of sand cement, 1: 6 mixed with 2 kg fly ash with the average compression yield from the three samples being 99.0%. The justification for the increase also shows that the highest percentage increase rate in the use of fly ash as an additive for this study was 50.15%. This shows that the use of fly ash shows a more stable mortar workability and shows that the use of fly ash as an additive is very good.

Keywords:- final year project, research, comparison, literature study

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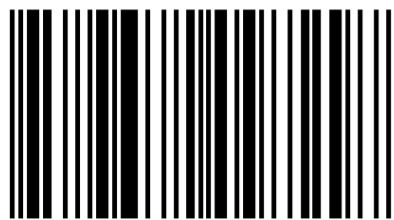
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