

**STUDY ON THE DIFFERENT ARRANGEMENT OF
BRICK MASONRY WALL BETWEEN THREE
TYPE OF BRICK**

by

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of the requirements for the degree
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APPROVAL AND DECLARATION SHEET

This project report titled “Study On The Different Arrangement Of Brick Masonry Wall Between Three Type Of Bricks” was prepared and submitted by Khairul Nusrat Bin Kamal (Matrix Number: 101201976) and has been found satisfactory in terms of scope, quality and presentation as partial fulfilment of the requirement for the Bachelor of Engineering (Building Engineering) in University Malaysia Perlis (UniMAP).

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KAJIAN TERHADAP PERBEZAAN SUSUNAN BATA DINDING ANTARA TIGA JENIS BATA

ABSTRAK

Projek ini melibatkan hasil keputusan mengenai kekuatan jenis ikatan bata mengikut jenis-jenis bata dan juga menentukan corak keretakan pada dinding bata. Susunan yang digunakan dalam kajian ini adalah ikatan “stretcher” dan ikatan “stack”. Terdapat tiga jenis bata yang digunakan dalam kajian ini iaitu bata merah, bata pasir dan bata pasir yang diubah seuai dengan menggunakan tempurung kelapa. Enam jenis sampel digunakan dalam ujian ini iaitu tiga jenis bata untuk susunan “stretcher” dan tiga jenis bata untuk susunan “stack”. Nisbah bancuhan mortar adalah 1:3 dimana satu adalah simen dan 3 adalah pasir. Ujian yang digunakan adalah ujian kekuatan tekanan. Ujian ini untuk membandingkan kekuatan tekanan diantara jenis susunan bata dan jenis bata. Serta untuk melihat bentuk corak keretakan pada jenis susunan bata. Masa yang dihadkan adalah selama 20 saat semasa ujian tekanan dilakukan kerana untuk mengambil bacaan yang maksimum. Ujian dilakukan berdasarkan BS 1881-118. Susunan bata jenis “stretcher” adalah lebih kuat iaitu 2.24 kN berbanding dengan susunan “stack” iaitu hanya 1.49 kN. Bata merah pula lebih kuat iaitu 2.24 kN daripada bata pasir iaitu 1.71 kN serta bata pasir yang diubah seuai dengan menggunakan tempurung kelapa iaitu hanya 1.55 kN. Dari segi bentuk keretakan pula, untuk susunan “stretcher” keretakan berlaku pada bahagian mortar serta bata. Walaubagaimanapun bentuk keretakan untuk susunan “stack” pula berlaku pada bahagian mortar.

ABSTRACT

This project presents the result of brick masonry strength depends on different bonding follow by the type brick and to determine the crack pattern at the masonry wall. The arrangement was used in this research is stretcher bond and stack bond. There were three types of brick was used in this research which is clay brick, sand brick and modified sand brick using coconut shell. Six specimens were used in this research where three types of brick for stretcher bond and another three types of brick for stack bond. The ratio for mortar mixture is 1:3 which is one for cement and three for sand. The test was used is compressive strength. This test is to compare compressive strength between arrangement of brick and types of brick. It is also to determine the crack pattern of brick masonry arrangement. The fixed time purposed is 20 seconds during the test of compressive strength before getting the maximum reading. This test was done by referring BS 1881-118. The stretcher bond of brick arrangement was stronger where the highest value stated at 2.24 kN compared to stack bond with only 1.49 kN. Similarly, clay brick was stronger with 2.24 kN than sand brick with 1.71 kN and also modified sand brick using coconut shell with only 1.55 kN. For crack pattern, the stretcher bond was crack at the part of the mortar and brick. However the crack pattern for stack bond was happen at the mortar.

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LIST OF EQUATIONS

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3.0	Compressive strength	22

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LIST OF SYMBOLS, ABBREVIATIONS OR NOMENCLATURE

mm	Milimeter
m	Meter
MPa	Megapascals
kN	Kilonewton
N/mm ²	Newton per square milimeter
cm	Centimetre
OPC	Ordinary portland cement
B10	Modified sand brick contain 10% coconut shell
BS	British Standard