COMPRESSED STABILIZED EARTH BLOCKS (CSEB) WITH BUFFALO DUNG AS BINDING AGENT

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ACCEPTANCE SHEET

This undergraduate thesis entitled, **"COMPRESSED STABILIZED EARTH BLOCKS (CSEB) WITH BUFFALO DUNG AS BINDING AGENT"**, prepared and submitted by **RHONALYN TOBIAS GUIANG** in partial fulfillment of the requirements for the degree **BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS ENGINEERING (AGRICULTURAL STRUCTURES AND ENVIRONMENT ENGINEERING)** is hereby accepted.

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BIOGRAPHICAL SKETCH

The researcher is Rhonalyn Tobias Guiang, middle child of Rolando Guiang and Khristine Guiang. She has two siblings, Christopher and Rica Mae. She was born on the first day of November, 1997.

She completed her elementary education at Muñoz Central School on March 2009 with flying colors. She finished her secondary education as a third honorable mention at Special Science Curriculum – Muñoz National High School on March 2014. She pursued Bachelor of Science in Agricultural and Biosystems Engineering at Central Luzon State University as a Department of Science and Technology – Science Education Institute (DOST-SEI) scholar under RA No. 7687.

She was awarded with Two Consecutive Academic Scholar (University and College Scholar) on April 2016, Two Consecutive Academic Scholar (both College Scholar) on April 2017, and College Scholar for A.Y. 2018-2019 on April 2019. She undergone Summer Practical Training Program (SPTP) as one of the requirements as DOST-SEI Scholar on June-July, 2018 at East-West Seed Co., San Ildefonso, Bulacan.

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ABSTRACT

GUIANG, RHONALYN T., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija. **June, 2019. COMPRESSED STABILIZED EARTH BLOCKS (CSEB) WITH BUFFALO DUNG AS BINDING AGENT**

Adviser: MARLON N. GALAD, M. Sc.

Earth is one of many alternative materials that can be used in place of residential sick building. However, it suffers from shrinkage, cracking, low strength, lack of durability and dimensional stability for building construction. This study contributes in making an alternative low cost structural material for farm buildings by using a locally available soil and agricultural waste material in CSEB. The study was conducted in order to determine the potential of buffalo dung as binding agent in CSEB.

The blocks was manually molded using the designed steel molder. The blocks were cured for 28 day and watering of blocks was done twice a day. The blocks were subjected to density, water absorptivity, drying shrinkage and compressive strength test based on different soil:cement:buffalo dung ratio of 95:5:0 (T_1), 85:5:10 (T_2), 75:5:20 (T_3) and 65:5:30 (T_4). Unit cost of the block was computed based on the materials and labor cost of each treatment.

This study was laid out in a Completely Randomized Design (CRD). Data were analyzed using Analysis of variance (ANOVA) and Least Significant Difference (LSD) at 5% level of significance was used for the comparison among means.

Treatment 2 have the highest density of 1602.396 kgm^{-3} and lowest water absorptivity of 9.3478%. As the buffalo dung content increased the density decreased due to the presence of fiber in the dung and as the density of soil is increased, its porosity is

reduced and less water can penetrate it. The computed drying shrinkage was highest in T_3 having a value of 7.9912%. The result on compressive strength of the blocks was highest in T_1 having a value of 0.919 MPa. Material ratio has no significant effect in both drying shrinkage and compressive strength. In addition, as the buffalo content increased the price per block decreased.

Keywords: buffalo dung, CSEB, binding agent

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