



**Title:** STRENGTH PROPERTIES OF PAVEMENT BASE MATERIALS STABILIZED WITH SUGARCANE BAGASSE ASH AND CRUSHED MANGIMA STONE AS COARSE AGGREGATE

**Name:** VERA KARLA S. CAINGLES

**University/Organization:** UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

**Abstract:**

The demand for base coarse materials has increased as a result of the fast growth in road infrastructure development hence, imposing stress on the available resources. In order to address this problem, this study explores the viability of using Portland cement, sugarcane bagasse ash, and Mangima aggregate as the fundamental components for road bases. An extensive number of laboratory tests were conducted such as sieve analysis, liquid limit, plastic limit, abrasion, modified proctor compaction, California Bearing Ratio (CBR), and Unconfined Compression Strength (UCS). Stabilized base coarse composed of two sets, control mix: (Mangima stone + soil + cement) and design mix (Mangima stone + soil + cement + varying amount of sugarcane bagasse ash (SCBA) of 1%, 2%, 3%, and 4%). Result revealed that the mixture of 3% sugarcane bagasse ash and 6% cement yielded the highest Maximum Dry Density (MDD), CBR, and UCS values of 2101 kg/m<sup>3</sup>, 102.6%, and 102.6psi, respectively Hence, the results indicate that 100% Crushed Mangima aggregate replacement, combined with 6% cement and 3% SCBA can indeed be considered as a viable alternative coarse aggregate for road base applications. Moreover, further study on increasing the amount of SCBA while decreasing the amount of cement is recommended.

**Keywords:** Materials engineering, base coarse materials, soil laboratory, Philippines

**Biography:** Vera Karla is a faculty member of the Civil Engineering Department of the University of Science and Technology of Southern Philippines. She is a registered Civil Engineer, Master Plumber, and Material Engineer. She specializes in geotechnical engineering in which her research studies focus on soil stabilization, slope stability analysis, geotechnical properties of soil, and others.