

## Theoretical Bearing Capacity of Modified Kacapuri Foundation

**Authors :** Muhammad Afief Maruf

**Abstract :** Kacapuri foundation is the traditional shallow foundation of building which has been used since long by traditional communities in Borneo, Indonesia. Kacapuri foundation is a foundation that uses a combination of ironwood (eusideroxylon zwageri) as a column and truss and softwood (Melaleuca leucadendra syn. M. leucadendron) as a raft. In today's modern era, ironwood happened to be a rare item, and it is protected by the Indonesian government. This condition then triggers the idea to maintain the shape of the traditional foundation by modifying the material. The suggestion is replacing the ironwood column with reinforced concrete column. In addition, the number of stem softwood is added to sustain the burden of replacing the column material. Although this modified form of Kacapuri foundation is currently still not been tested in applications in society, some research on the modified Kacapuri foundation has been conducted by some researchers and government unit. This paper will try to give an overview of the theoretical foundation bearing capacity Kacapuri modifications applied to the soft alluvial soil located in Borneo, Indonesia, where the original form of Kacapuri is implemented this whole time. The foundation is modeled buried depth in 2m below the ground surface and also below the ground water level. The calculation of the theoretical bearing capacity and then is calculated based on the bearing capacity equation suggested Skempton, Terzaghi and Ohsuki using the data of soft alluvial soil in Borneo. The result will then compared with the bearing capacity of the Kacapuri foundation original design from some previous research. The results show that the ultimate bearing capacity of the Modified Kacapuri foundation using Skempton equation amounted to 329,26 kN, Terzaghi for 456,804kN, and according Ohsaki amounted to 491,972 kN. The ultimate bearing capacity of the original Kacapuri foundation model based on Skempton equation is 18,23 kN. This result shows that the modification added the ultimate bearing capacity of the foundation, although the replacement of ironwood to reinforced concrete will also add some dead load to the total load itself.

**Keywords :** bearing capacity, Kacapuri, modified foundation, shallow foundation

**Conference Title :** ICCESA 2017 : International Conference on Civil Engineering and Structural Analysis

**Conference Location :** Tokyo, Japan

**Conference Dates :** May 28-29, 2017