

**The 2nd Conference on Management, Business,
Innovation, Education, and Social Science (CoMBInES)
Taichung, Taiwan 3-6 March, 2022**

**DESIGN COMPARISON OF STRUCTURAL ELEMENTS BETWEEN
CONVENTIONAL SLAB AND RIBBED SLAB ON OPTIMIZATION CONCRETE
VOLUME EFFECIENCY**

Lionardo, Yusra Aulia Sari
Faculty of engineering And Planning, University Internasional Batam
{lionardolun@gmail.com yusra@uib.ac.id }

ABSTRACT

Residential housing development in Batam as an urban city has grown well. However, housing developers' increased construction on small, medium, and high density has massively affected concrete volume and rebar (steel reinforcement). Hence, the purpose of structural engineering analysis had to have a brilliant idea to provide a way of design and implementation to reduce the uses of the concrete and reinforcement without reducing the strength and serviceability of structures. An efficient concrete volume and rebar with the same structure strengths is the goal of this research. A simple two- or three-story house structure elements consist of foundation, column, beam, and slab. At this time, what to achieve is to provide a design that can reduce the use of the concrete volume of slab compared between conventional and ribbed slabs. For the typical slab design, what to achieve is the deflection of the slab, which can be categorized as serviceability. Limitations of this case are only for a simple slab layout of 5m x 5m and focus on optimizing the volume concrete efficiency with all dead load and living load if referred to our Indonesian Standard (SNI). Specification of beam and column design did not consider in this research. This research methodology is running model the slab design between a conventional and ribbed slab using ETABS. The study will provide a structural detail between these two-slab designs and dimensions.

Keywords: *Residential Housing, Efficiency, Ribbed Slab, Conventional*