ABSTRACT

Now, constructions are dominate by concrete because it have much excess. Beside that, concrete also have weakness, such as the shape that difficult to change, weak of tension, heavy, need high accuration and more time in execution. Because of that, we need the other material that have good quality, such as steel. Steel have some excess such as high strength, light, elastic, easy and save the working time.

Gadjah Mada University student dormitory, located in Sendowo, Sleman, Yogyakarta is a building that constructed by reinforced concrete consist of 7 levels. In this final project, this building will be modificated, from concrete building to be steel building with 20 levels. The type of steel that used is Castellated Beam because it have more exceed than the solid steel. This building designed in Dual system, consist of Ordinary Momen Resisting Frame (OMRF) and Ordinary Consentric Brace Frame (OCBF).

The working method such as data collection, study of literature, preliminary design of secondary structure, load calculation, design and control of secondary structure, preliminary design of main structure, load calculation, design and control of main structure, design of connection, and design of foundation.
The result of this research are obtained the dimension of structure, such as 9cm thick plate with diameter 8-200 reinforcement, beam stairs using WF 200x100x4,5x7, lift beam WF 400x200x8x13, longitudinal roof beam CB 375x150x6,5x9, transversal roof beam CB 310x125x5x8, longitudinal floor beam CB 500x200x8x13, tranversal floor beam CB 437,5x175x7x11, column level 1 – 5 KC 800x300x14x26, column level 6 – 10 KC 600x300x12x20, column level 11 – 15 KC 600x200x7x11, column level 16 – 20 KC 450x200x9x14, bracing WF 200x200x10x16, and pile foundation using grade A1 diameter 50 cm and 16 m depth.

Keywords: Modification, Castellated beam, Dual system, OMRF, OCBF